John Cranford,
M. D.

A

TREATISE

ON THE

HYDROCELE:

CONTAINING

AN EXAMINATION OF ALL THE USUAL METHODS

OF OBTAINING RELIEF IN THAT DISEASE.

THE

RADICAL CURE BY INJECTION

IS PARTICULARLY DESCRIBED,

AND ILLUSTRATED WITH CASES.

By JAMES EARLE, Esq.

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AND
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LONDON:

PRINTED FOR J. JOHNSON, N° 72, ST. PAUL'S CHURCH YARD.

1791.

Crawford

TO

WILLIAM AUSTIN, M. D.

FELLOW OF THE COLLEGE OF PHYSICIANS,
AND
PHYSICIAN TO ST. BARTHOLOMEW'S HOSPITAL.

SIR,

PERMIT me to have the honor of inſcribing to you the following treatiſe, which was ſubmitted in manuſcript to your peruſal.

The approbation of ſo diſtinguiſhed a judge of general literature, and more particularly of every branch of medical knowledge, could not fail of being highly grateful and encouraging to the writer.

I am, SIR,
with great eſteem,
your much obliged
and moſt obedient ſervant,

JAMES EARLE.

Hanover Square,
July 20, 1791.

A

TREATISE

ON THE

HYDROCELE.

In my edition of the works of the late Mr. Pott was inſerted an account of a method of curing the Hydrocele, which appeared to me preferable to any which I had known practiſed in this country; but it having been ſuggeſted that the ſucceſs of the operation was ſcarcely ſufficiently eſtabliſhed by the caſes which were there exhibited, and the ſubject being of importance to a conſiderable part of mankind, I have been induced to reſume it, and to relate what further obſervations on it have occurred.

My former tract, being joined to Mr. Pott's comprehenſive account of every ſpecies of Hydrocele, rendered ſuperfluous any other introduction; but this, not having the ſame advantage, requires ſome previous deſcription of the diſeaſe itſelf; though it may not be neceſſary to enter very deeply into what has been repeatedly diſcuſſed by more able writers, and is now pretty generally underſtood.

The reſearches after a ſafe, eaſy, and effectual cure for the Hydrocele have exerciſed the ingenuity of many practitioners, and a variety of methods have been adopted; theſe, I preſume, it will not be unuſeful to collect and bring into one point of view, to give ſome account of the riſe and progreſs of each, and to examine their reſpective merits and defects.

The term Hydrocele is uſually applied by ſurgeons to that ſpecies of ſwelling in the ſcrotum which is formed by an accumulation

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of a watry fluid; it is a diſeaſe to which all deſcriptions and conditions of men are ſubject, from the earlieſt infancy to the lateſt age, and to which the healthy, the infirm, the weak, the robuſt, the voluptuous, and the abſtemious, appear to be equally liable. The original cauſe, in ſome inſtances, may be traced, but generally is not to be diſcovered. A blow, or a contuſion, has been often known to produce it; ſometimes it is ſubſequent to a hernia humoralis: the moſt common cauſe perhaps is relaxation, as appears from the frequency of it in warm climates.

There are varieties, in the ſituation and appearances of this diſeaſe, which have been noticed by ſeveral writers. I mean to confine my obſervations to that kind which is moſt common, and is formed between the coats which envelop the teſticle; theſe are well known to be two only, the tunica albuginea, which is the immediate and proper

covering of its vaſcular ſtructure, and the tunica vaginalis, which is a continuation of the ſame membrane, but being reflected forwards, looſely inveſts the teſtis and the greater part of its epididymis, without any connection except in the hinder part*. On the ſurface of theſe, as on every membrane which lines the various cavities in animal bodies, there is a conſtant ſecretion of a fluid which prevents any coheſion, and permits the eaſy motion of contiguous parts: this fluid is uſually kept from increaſing beyond what is neceſſary for the above purpoſes, by veſſels deſtined to abſorb the redundancy. If either of theſe offices be not duly performed, that is, if the ſecretion and abſorption do not keep pace with each other, an alteration in the ſtate of the parts muſt be the conſequence.

* For a more particular deſcription of the ſtructure of theſe parts, vid. Pott on the Hydrocele.

I ſhall

I ſhall not dwell at preſent on the effects of a defective ſecretion from theſe ſurfaces, but if either the fluid be ſecreted too faſt, or, what perhaps is moſt commonly the caſe, the powers of the abſorbent veſſels fail, a tumor is formed which gradually becomes more and more perceptible as the collection increaſes, and conſtitutes the Hydrocele.

The ſize and appearance of the tumor vary in different perſons and under different circumſtances. At its beginning is uſually rather round, but as it increaſes, if it meets with no reſiſtance, generally aſſumes a pyriform figure, with its larger extremity downward; the nature of membranes being to ſtretch and accommodate themſelves to gradual diſtention, it ſometimes increaſes to an enormous bulk, reaching in ſome caſes almoſt to the knees. If the tumor in its growth meets with reſiſtance, as from a tight ſuſpenſory bandage, it ſometimes takes a lateral

direction ſo as to reach toward the groin on one ſide and into the oppoſite ſide of the ſcrotum on the other.

It is perfectly indolent in itſelf, though its weight does ſometimes produce a ſmall degree of uneaſineſs in the back. The tranſparency of the tumor, which is mentioned by ſome writers as a characteriſtic of the diſeaſe, is not always diſcernible, being frequently prevented in adults by the thickneſs of the tunic and ſcrotum, and ſometimes by the opacity of the contained fluid. In infants, the thinneſs of theſe parts and the clearneſs of the water almoſt always ſuffer the rays of light to paſs through. In ſome caſes it is ſo diſtended as to be hard and almoſt incompreſſible; in others, though the Hydrocele may have been of long ſtanding, it is ſo ſoft and lax that the teſticle is eaſily perceptible; if the tunica vaginalis be thin, the teſticle may be perceived; but if the tunic be firm, or thickened, the teſtis often

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cannot be felt diſtinctly, though, to an intelligent obſerver, there is almoſt always a ſenſation where the teſticle is connected, ſufficient to direct where a puncture ought not to be made: this is a point of the utmoſt conſequence to be aſcertained, as a wound of the body of the teſtis would not only miſs of evacuating the water, but would be productive of the moſt dangerous conſequence. The uſual place where the teſtis is fixed is in the poſterior and middle part of the tumor; if the ſwelling be not very large, it is rather towards the bottom; but as this ſometimes varies, the ſituation of it muſt be determined by the tactus eruditus of the examiner, and will be diſcovered by the firmneſs and hardneſs ariſing from the body of the teſtis, together with its appendage the epididymis, being of a denſer or more ſolid texture than any of the contiguous parts. In every other part of the tumor, the two membranes being

unconnected, and affording a void ſpace for the collection of water, the difference will always be diſtinguiſhable.

In moſt caſes of Hydrocele the ſpermatic veſſels may be diſtinctly felt above the tumor, which is the firſt mark of the diſeaſe to be attended to; it however ſometimes happens that the accumulating water meeting with reſiſtance below, riſes into the ſuperior part of the tunica vaginalis, and diſtends it quite up into the ring of the abdominal muſcles, ſo as to make extremely difficult, if not impoſſible, to feel the ſpermatic proceſs. This circumſtance throws an obſcurity on the nature of the caſe, and confounds it with the appearance of a deſcent of inteſtine, or omentum; other ſymptoms and marks are then to be adverted to: in the Hydrocele the tumor can never be made to diſappear by any poſition of the body, or any preſſure of the hand; but in the hernia ſcrotalis, unleſs it be adherent,

herent, or incarcerated, the tumor may be returned into the cavity of the abdomen by gentle preſſure on it, aſſiſted by a favourable or horizontal poſition of the body. Or in caſe it cannot be returned, the patient being directed to cough, a protruſion from the abdomen may generally be diſcovered by the impulſe which it receives from the action of the abdominal muſcles; from which the Hydrocele, being unconnected with the contents of the abdomen, is wholly exempt.

Another circumſtance which I have remarked is, that on preſſing the tumor upward, the ſuperior termination of it, if it be a Hydrocele, will be ſometimes evident to the view, though it may be too far engaged within the ring to be diſcoverable by the touch.

The hiſtory of the caſe often helps to point out the difference between the two diſeaſes, the Hydrocele begins below, the hernia above. Too great attention cannot be given to every

mark of diſcrimination, as a miſtake of one for the other might prove fatal.

It is ſometimes difficult to diſtinguiſh the Hydrocele from a diſeaſed and enlarged teſtis, particularly when the texture of the gland is become looſe, or when there is ſome fluid in the body of it, which often happens; the feel of the tumor is then preciſely that of a hydrocele. Other circumſtances however there are which generally lead to determine its true nature; the greater proportionate weight of the tumor, the varicous ſtate of the veſſels, the inequality of the ſurface, and the painful ſenſation which uſually attends the examination, or handling a diſeaſed teſticle, are diſtinguiſhing marks of it.

A collection of water frequently accompanies a ſcirrhous enlargement of the teſticle, and in ſuch caſes is probably cauſed by it; but a ſimple Hydrocele will not produce a diſeaſe in the teſticle. Some degree of enlargement of

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the parts indeed we generally find accompanying Hydroceles, particularly thoſe of large ſize and long duration; but this is not diſeaſe, it is probably only the effect of the continued preſſure of the accumulating water. It is the nature of membranes to thicken in proportion to the reſiſtance which they are obliged to make. We find this evidently in the tunica vaginalis, which uſually grows in thickneſs as it becomes more diſtended, and we may reaſonably conclude, that the tunica albuginea is thickened by the counter preſſure from the ſame cauſe, which will give an apparent enlargement to the body of the teſtis: when the preſſure is removed by diſcharging the water, and its return prevented by the radical cure, provided too great inflammation has not been excited by the operation, the teſtis appears to grow ſmaller at the termination of the cure than when the water was evacuated. This effect muſt be produc-

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ed by both the tunics becoming thinner and more contracted, and is a ſort of proof of the fact being as I have ſtated, that the moſt frequent increaſe in the ſize of the teſtis in Hydroceles ariſes from the thickening of the tunics, and that it is cauſed by preſſure: the ſame effect is produced in the peritonæum in caſes of the aſcites, and ſtill more evidently in hernial ſacs, in which great diſtention cauſes it to grow thick and hard; fluids, collected in the ovaria, in the cavities of joints, in the thecæ of tendons, and I believe may be added, in every part of the body, have generally the ſame effect to a certain degree, beyond which indeed the efforts of nature, to get rid of the contents, cauſe the parietes to become partially thin.

A ſlight enlargement therefore of the parts is not a prohibition to the radical cure of a Hydrocele, though a cancerous or ſcirrhous ſtate of the teſtis certainly is, as it would

be

be highly imprudent and unſafe to irritate and inflame an already diſtempered gland.

Conſidering then the diſeaſe as a ſimple, well defined Hydrocele, which, though not a painful complaint, is obſtructive to the exertions of the indigent and laborious, a conſiderable impediment to the active pleaſures of the opulent, and is found to be ſo unſeemly, inconvenient and troubleſome by all, as to demand the aſſiſtance of ſurgery; we will next proceed to examine the various means which have been practiſed for its relief.

THE PALLIATIVE CURE.

THE evacuation of the water is ſufficient to remove the preſent inconvenience ariſing from diſtention, and ſhould in general be performed at leaſt once on thoſe who determine to undergo a radical cure, as it gives an opportunity of examining the ſtate of the teſtis, and alſo of permitting the cavity

cavity to be filled again, only to ſuch a ſize as may be thought to be beſt calculated to inſure ſucceſs in any future operation.

The palliative cure conſiſts in drawing off the water by a puncture made through the ſcrotum and tunica vaginalis; for this purpoſe ſome have preferred the lancet, others the trochar. I make no ſcruple in recommending the latter, as it completely evacuates the water with eaſe and expedition. When the wound is made by a lancet, nothing is left to maintain a communication between the opening in the ſcrotum and that of the tunica vaginalis, conſequently the water is often either prevented from coming out of the ſac at all, or it eſcapes into the cellular membrane, and cannot find the paſſage through the ſcrotum; to obviate this, the practitioner, as I have often remarked, is obliged to introduce a probe, which cannot always be readily effected, and makes the operation painful and

tedious. The only reaſon for doing it with a lancet, which, in my opinion, can obtain, is when there is any doubt of the nature of the caſe, or the ſituation of the teſtis; under ſuch circumſtances a ſmall inciſion may certainly be conducted more ſuperficially, and with leſs hazard, by means of a lancet than by a trochar: but when no ſuch circumſtances exiſt, the trochar is preferable. The beſt method to do the operation is to graſp the upper part of the tumor with the left hand, as tight as can be without giving pain, then to plunge a ſmall trochar into the anterior part of it, rather lower than the middle, the finger being previouſly applied to the cannula to regulate the preciſe depth it is to penetrate, and any blood veſſel which may be viſible being carefully avoided. The ſtilet is then to be withdrawn, and the cannula left till the water is evacuated.

I have never found a patient, who has undergone

dergone both theſe operations, chooſe again to ſubmit to the lancet; they are, however, both eaſily practicable by any one who is acquainted with the ſtructure and ſituation of the parts concerned; and the evacuation of the water, as was obſerved, affords a temrary relief; but the neceſſity of the frequent repetition of it, from the almoſt conſtant return of the complaint, the inconvenient magnitude which the tumor muſt attain before it can ſafely be attempted, with the danger, and ſometimes pain, attending the diſtention, render the producing a permanent cure a moſt deſirable object.

The methods which have been employed for the radical cure of the Hydrocele are many: in giving an account of them I ſhall follow the order in which they are laid down by the learned Monſ. Sabatier. Indeed this gentleman has conſidered the ſubject with ſuch accuracy, that little can be ſaid with regard

to

to the hiſtory or deſcription of them, which is not to be found in his excellent memoir. His obſervations, therefore, I ſhall freely make uſe of, and in doing this ſhall render ſome of my readers the greater ſervice, as his work, I believe, has not yet appeared in our language, and is not ſo univerſally known among us as it deſerves.

The operations may be reduced to ſix principal ones; the inciſion, the exciſion, the cauſtic, the tent, the ſeton, and injections.

THE INCISION.

An inciſion through the whole extent of the Hydrocele, ſo as to bring the naked teſtis completely into view, is the moſt ancient operation we have any account of; it was practiſed even before it was known that the complaint was ſuſceptible of a palliative cure. Galen was the firſt who mentioned that it

might be relieved by evacuating the water through a cannula, introduced by means of a puncture; but Celſus, who preceded him by about a century, deſcribed the operation of inciſion. The operation, he obſerves, ſhould be done on the ſcrotum at the time it is moſt full, and the fluid moſt abundant, and when the patient is adult. When the water is in ſmall quantity, or the ſubject is young, the operation ſhould be performed in the groin, after having raiſed the tumor towards that ſide; it is not ſufficient to evacuate the water, but part alſo of the coats which contain it ſhould be removed; the wound ſhould be cleanſed and waſhed with water in which ſalt and nitre are diſſolved. This is all which Celſus ſays on the ſubject. It is not very clear whether or not he means that the inciſion ſhould be made the whole length of the tumor, and how the dreſſings were applied we are left to conjecture,

ture, unleſs he deemed it unneceſſary to repeat the directions which he had given in another place, particularly in cap. 19, lib. 7, where he has deſcribed at length the method of treating wounds after any operation of inciſion into the ſcrotum.

Paulus Egineta is much more exact in this reſpect; he omits no precaution which may be neceſſary to enſure the ſucceſs of the operation. The patient, he ſays, ſhould be placed on his back, his loins ſuſtained by pillows, and the ſcrotum by a ſponge placed underneath. The inciſion is to commence at the middle of the tumor, and to be carried to the upper part of it, in a line parallel to the raphè. This inciſion is only to go through the teguments; the bag which contains the water is then to be opened, and part of the ſides of the ſac to be taken away; after which a director is to be introduced, and conveyed to the bottom of the ſcrotum, and a diviſion

is to be made to the bottom, that the diſcharge of blood and matter may find a free exit: the cavity is to be filled with lint, and the neighbouring parts and the belly are to be fomented; when the wound is cleanſed, and partly incarned, the lint is to be leſſened, and ſimple dreſſings continued till the whole wound is healed.

Albucaſis deſcribes the inciſion with the ſame exactneſs, and almoſt in the ſame terms; but he adds two very material circumſtances; the firſt is, that, after this method of treatment, the Hydrocele is liable to return, the ſac not being deſtroyed; and the other is, that the teſtis ſometimes eſcapes out of the lips of the wound. Great care, he obſerves, ſhould be taken to return it, and keep it in its place. This accident depends on the retraction of the ſides of the ſkin, and of the membrane which contained the water; for the teſtis itſelf ſhews no diſpoſition to

leave

leave its original ſituation, and can only give way to the action of the parts which ſurround it: nevertheleſs, the precept which Albucaſis gave is very important; and we meet with the ſame caution in other authors.

Since the end of the eleventh century, when he wrote, we find no mention of this method for a great length of time; practitioners recommended others, as, the cauterization of the ſac, the uſe of the tent, and of the ſeton. Hildanus firſt reſumed the cure by inciſion, and appears to have practiſed it; the ſixty-ſixth obſervation of the fourth century is a proof, and furniſhes at the ſame time an example of the ſucceſs which attended it. The patient was forty-five years of age, of a robuſt conſtitution; he had long been ſubject to a Hydrocele of ſuch bulk as to be very incommodious to him. After the proper preparation, an inciſion was made

through the teguments, the tunica vaginalis was brought into view, and was then divided through the whole length: the cavity was filled with a large tent, which was placed the whole length of the teſtis to the bottom of the ſac. The patient recovered. Hildanus obſerves, that this method ſhould be uſed with great circumſpection, as it is ſometimes followed with ſerious conſequences, which put the patient's life in moſt imminent danger.

This is not the only author who has ſeen bad conſequences from the operation by the inciſion.

Dodonæus cites a caſe in which the inciſion was followed by gangrene, and cauſed the death of the patient.

Wiſeman, one of the diſtinguiſhed ſurgeons of the laſt century, obſerves, that it is often followed by colic, fever, hiccough, and gangrene, when the patient is of a delicate conſtitution.

Mr.

Mr. Cheſſelden, who was by no means a timid operator, ſays he has done the operation by inciſion, and ſeen it done by others; but never thought the cure worth the trouble and pain the patient muſt neceſſarily undergo.

According to Heiſter's account the curatio perfecta, by which he means the inciſion, confines the patient many weeks to his bed, is painful, and in ſome meaſure dangerous.

We find alſo inſtances, in the moſt modern authors, in which this operation has been the cauſe of very ſerious conſequences.

Mr. Sharp, in his treatiſe on operations, relates two caſes where the inciſion produced very dangerous accidents. The firſt is in a man of a robuſt and good conſtitution, whoſe Hydrocele was opened the length of four inches. In the evening, after the operation, he had a fever; the ſcrotum and teſtis began to inflame and tumefy; the patient felt ſevere

pains in the region of the loins: from the third day to the ſeventh he was in great danger till the ſuppuration appeared to be eſtabliſhed, after which he grew better; but the teſticle ſuppurated, and a large quantity of matter was formed. The diſcharge did not begin to diminiſh till the twenty-fourth day; adheſions were then formed between the teſticle and the membranes of the ſcrotum, and the forty-third day the wound was entirely healed.

In the ſecond caſe there was alſo a violent ſymptomatic fever, which terminated in an abſceſs in the teſticle; the patient, who was only eight years old, very narrowly eſcaped with life.—On the whole, he concludes, that both inciſion and cauſtic are attended with ſo much danger, that, notwithſtanding the ſucceſs in the end, he believes whoever reads the caſes will be inclined to reject both methods, and abide rather by the palliative

cure;

cure; and again, that he has known a few examples in favour of the operation, but by no means enough to warrant the recommendation of it, unleſs to ſuch perſons as are inconſolable under the diſorder, and are willing to ſuffer any thing for a cure.

Mr. Warner obſerves he has never ſeen any fatal conſequences ariſe from the inciſion; but adviſes that it ſhould only be practiſed upon thoſe who are of a good habit of body, and who have not exceeded the middle ſtage of life.

The authorities which have been quoted are certainly adverſe to the operation of inciſion; but to treat it with that impartiality which I would wiſh to preſerve, it is proper to remark, that it has been practiſed by ſurgeons of the firſt reputation and abilities, and that it is ſtill preferred by ſome ingenious practitioners among the moderns to the ſeton or cauſtic.

Mr.

Mr. Bell, in his Syſtem of Surgery, after having enumerated all the methods which have been employed for the cure of the Hydrocele, has reduced them to three as now generally in uſe, the inciſion, cauſtic, and ſeton; of theſe he prefers the inciſion: but his account does not convey a very favourable impreſſion of either of them, as he ſays "he has ſeen all the three methods produce troubleſome ſymptoms, ſuch as great pain and tenſion of the abdomen, inflammation and fever: and again, if *either* of them be practiſed on perſons otherwiſe diſeaſed, on old people, or of infirm habits of body, the ſymptomatic fever is apt to run too high for the ſtrength of the patient, and the ſuppuration, produced by a high degree of inflammation, tends afterward to deſtroy entirely the remains of a conſtitution already much impaired."

The ſame writer recommends the inciſion

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to be performed in cases where, from accident, the Hydrocele is burst, and the water is diffused in the cellular membrane under the scrotum: his words are, "Instances of the scrotal anasarca of a local nature have also occurred from the rupture of the Hydrocele of the tunica vaginalis testis; when this species of Hydrocele arrives at a great size, jumping from a height, or a violent blow or bruise of any kind, will readily burst it, and the water not finding a passage outwardly must necessarily diffuse itself over the whole scrotum. Different instances of this kind have been met with, two of which are related by Douglas; and the same kind of swelling has been produced by the water of a Hydrocele of the vaginal coat being improperly drawn off by the operation of tapping. When the orifice in the skin is allowed to recede from the opening into the vaginal coat before the water is all discharged, the

the remainder of the collection is very apt to diffuse itself through all the cellular substance of the scrotum.

" In whichever of these ways the swelling is produced, the cure ought to consist in laying the tumor sufficiently open, not only for evacuating the diffused water, but for effecting a radical cure of the Hydrocele of the tunica vaginalis."

Here I must take the liberty to observe, that I have seen and could enumerate many instances of the accident of large and much distended Hydroceles being burst by blows against the pummel of a saddle, by falls from horseback, and other causes. I have known several times the cannula of a trochar slip out of the tunica vaginalis, and permit the water to run into the cellular membrane under the scrotum; but I never saw a single instance of the kind where the extravasated fluid was not perfectly and totally absorbed,

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in a very ſmall ſpace of time, without the neceſſity of inciſion, puncture, or any other operation. After which the Hydrocele again increaſed, as if the palliative cure alone had been performed, and became by degrees fit for a radical operation. So that, if the inciſion in this caſe be uſed for evacuating the diffuſed water, I apprehend it to be wholly unneceſſary: and if it be intended to effect a radical cure of the Hydrocele, while the tunica vaginalis is in a collapſed ſtate, and the cellular membrane of the ſcrotum loaded with water, probably alſo inflamed by the diſtention, it muſt ſurely be a moſt improper time to undertake it; and I ſhould conceive, few practitioners would think it right to perform ſuch an operation under ſuch circumſtances.

When Mr. Pott firſt publiſhed on the Hydrocele, the inciſion was the moſt uſual mode of obtaining its cure, and conſequently came in for its full ſhare of deſcription in his

general

general treatiſe on that complaint; from thence, however, it has been inferred, that he was the patron or adviſer of that operation; but, though he gives an accurate account of the method of performing it, and preſcribes the beſt means of avoiding the evils which frequently ariſe from it, whoever will carefully conſider the whole of his account, muſt obſerve the caution with which he ſpeaks on the ſubject, that he excludes the unhealthy and infirm, and only thinks it practicable on the young and vigorous; and he remarks, that it can never be ſaid to be totally void of danger, and that it bears the appearance of an operation of ſome ſeverity. On the whole, it clearly appears that he was not ſatisfied with it, and the fact is, that he did not perform it during the laſt twenty-ſix years of his life, in which time it has not been practiſed at St. Bartholomew's hoſpital.

I muſt confeſs I took an early and deep-

rooted diſlike to the cure of Hydroceles by inciſion, which more mature obſervation and experience have not in the ſmalleſt degree removed, as I have conſtantly remarked it to be extremely ſevere in the execution, and that great tenſion, pain, and fever, are generally its immediate conſequences; after which the progreſs of the cure is often ſlow and tedious, requiring in ſome caſes, though under the care of the ableſt practitioners, many months for its completion.

The bad ſymptoms which have attended this operation have been attributed to the difficulty with which membranous parts ſuppurate; on which account it has been adviſed to touch the tunica vaginalis with gentle eſcharotics, in order to bring on a ſuppuration. It has been alſo recommended to ſcarify it to promote its exfoliation.

That the operation of inciſion, according to the method in which it has been uſually practiſed,

practiſed, may prove a radical cure of the Hydrocele, the whole interior ſurface of the ſac muſt ſuppurate and granulate. That it is not calculated to procure an union by the firſt intention, as has been ſuggeſted, muſt be evident, for whether the cavity be filled with lint, farinaceous matter, or any other ſubſtance, the coats are equally prevented from immediate union; after which, the next proceſs which nature adopts in order to unite contiguous parts muſt take place, and if the cavity be not filled up with granulations, or if any part remains which does not contract an adheſion to the teſticle, a new collection of fluid may take place, and thus the complaint be renewed. Albucaſis mentions the poſſibility of this, and it has been confirmed by the experience of the moderns. Many inſtances have been produced of this fact having happened after the wound has been healed. Mr. Sabatier

mentions

mentions a caſe in which a collection took place on each ſide of the cicatrix after it had been firmly eſtabliſhed, and required to be let out by two inciſions; and another inſtance in which the patient ſubmitted twice to the operation by inciſion, which were both done by a very able ſurgeon; but the water collected again, and he was afterwards obliged to ſuffer the ſides of the ſac to be taken away before the cure was completed.

I have lately ſeen a gentleman, who underwent the inciſion in Ireland, in whom a collection of water was again formed in the ſame part, and ſuch was his dread of what he had ſuffered from the operation, that he permitted it to increaſe to an enormous ſize before he would ſubmit to any other means for his relief.

EXCISION.

It is commonly ſuppoſed that the exciſion of the ſac of a Hydrocele is as ancient as the inciſion. Celſus is ſaid to have clearly deſcribed it. It is true that this author, after having recommended to take away a part of the bag in which the water is contained, ſays, if the complaint has its ſeat under one of the interior coats of the teſticle, an inciſion through the ſcrotum ſhould be made, to lay the tumor bare, and to extirpate it intire; at leaſt this appears to be the meaning of the Latin text, which is not always perfectly intelligible—ſi ſub mediâ imâve tunicâ, totæ hæ extrá ſcrotum collocandæ, excidendæque ſunt. But can Celſus mean that we ſhould take away the whole of the tumor, and conſequently that the teſticle ſhould at the ſame time be extirpated? or that we ſhould only remove the

membranes

membranes which ſerve for the coat or covering of the Hydrocele? This it is difficult to determine, but in another place he clearly recommends preſerving the teſticle. Purgatus ita teſticulus, per ipſam plagam cum venis & arteriis & nervo ſuo leniter demittendus eſt, lib. vii. cap. 19; and ſtill more particularly in a paſſage of the ſame chapter before quoted. On the whole, I am perfectly ſatisfied that Celſus means to diſſect off as much of the ſac, whereſoever it ſhall be ſituated, as can be done conſiſtently with the preſervation of the teſticle, and expreſsly with a deſign to obliterate the cavity, that there may be no future lodgment for a fluid.—Galen, who followed him, is of opinion that the part affected ſhould be taken away with the diſeaſe.—Albucaſis appears to be the firſt who has unequivocally deſcribed the exciſion. When the teguments have been divided, he ſays we muſt diſſect and open the

membrane, and let out the water, after which " incide ſyphac qualiter-cumque eſt poſſibile tibi incidere ipſum aut cum totalitate ſua, aut fruſtatim, præcipue ejus latus ſubtile, nam ſi non exquiſite perſcruteris in inciſione ejus non fit ſecuritas quin aqua redeat. Si autem procedit ovum exterius a cute ſua, in horâ operationis tuæ, tunc, quando compleveris ſectionem ſyphac, reduc ipſum."—This laſt circumſtance is deciſive; if the teſticle is forced out of its ſituation during the operation, it ſhould be replaced after having taken away the membranous production which contained the water. It is clear then that Albucaſis did not adviſe the extirpation of the teſtis, he only preſcribed the exciſion of the ſides of the bag which fōrms the Hydrocele.—Fallopius recommends the ſame method, which he mentions as an invention of an old date; however he thinks it only applicable to particular Hydroceles.

Although

Although the exciſion is clearly deſcribed by Albucaſis and Fallopius, it is not again taken notice of till we meet with it among the moderns; either it was not underſtood, or it was deemed too difficult and too cruel to be executed.

We find ſome of the French writers recommending the exciſion of part or the whole of the ſac when it has been much diſtended or is much thickened and hard.

Mr. Douglas has aſſerted that the exciſion of the ſac is the only method which ought to be uſed, if we are obliged to uſe a cutting inſtrument for the cure of the Hydrocele; he ſeems to have been determined in this opinion by the bad ſucceſs which attended his firſt operation by the inciſion; his patient had very alarming ſymptoms, ſuch as great pain, inflammation, fever, and a tumefied hardneſs of the cyſt. Theſe ſymptoms were not abated till the cyſt was ſcari-

fied through its whole extent, and in a manner divided into ſlips. The ſeparation of theſe ſmall portions being eaſily accompliſhed, Mr. Douglas thought he ſhould ſucceed better if he took away the whole of the cyſt; he ſoon had an opportunity of trying this new method, and it was attended with all the ſucceſs which he expected. The ſymptomatic fever which followed was leſs, the treatment more ſimple, the cure completed in leſs time, and a return of the complaint impoſſible. The method in which Mr. D. adviſes the operation is as follows: The patient being properly placed, two inciſions were to be made in the ſcrotum forming an oval, and reaching from the upper to the lower part; this oval portion to be diſſected off, after which an opening was to be made in the ſac, and enlarged by ſciſſars; the tunica vaginalis was then to be extirpated entirely, cloſe to where it is connected with the ſpermatic veſſels; an aſſiſtant

ant ſupporting the teſticle during the operation, and afterwards replacing it in its proper ſituation; the cavity is then directed to be filled with dry lint.—Mr. D. directs the oval piece of ſkin to be diſſected off before the opening in the tunic was made, becauſe he had been embarraſſed in a former operation in which he had omitted it; the lips of the wound turning in, he was not able eaſily to get at the internal part of the tumor to diſſect off the tunic; he recommends great caution not to injure the teſticle or ſpermatic veſſels.

This operation, though followed by Mr. White of Mancheſter, and many other ſurgeons of eminence and character, muſt have been tedious, and exquiſitely painful in the performance; and, from the manner in which it was directed afterwards to be treated, muſt have been attended with violent and dangerous ſymptoms. Yet I am decidedly of opi-

nion, that the exciſion is leſs objectionable than the inciſion, provided it were neceſſary to *open the Hydrocele at all* in order to obtain its cure; but in that caſe I am alſo clear that the beſt method would be, after having removed the whole of the cyſt, to bring the ſides of the teguments into contact, and not to prevent their immediate union by any intervening ſubſtance whatever; by this method, that exquiſitely ſenſible membrane the tunica albuginea would remain covered, and not be expoſed to irritation from the air and from topical applications, which circumſtances are the principal cauſes of the violent inflammatory ſymptoms which uſually follow ſuch expoſure; but I hope to be able to prove, that ſuch an operation is ſeldom, if ever neceſſary.

THE CAUSTIC.

Some of the earlieſt practitioners were not content with ſimply dividing the ſac of the

the Hydrocele, in order to induce a ſuppuration of the membranes, and conſequently an adheſion of the ſurrounding parts to the teſticle; nor in taking away the membrane to prevent the poſſibility of a new collection: Some of them propoſed to open the bag with the actual cautery. This is recommended by Paulus Egineta. In the operation which he deſcribes, the ſkin is to be deſtroyed by a cautery of a particular form, the eſchar which is left with the cellular membrane to be diſſected away, a cautery of another ſhape is then to be applied to the membrane.

On the pain and horror attending ſuch a proceſs it is unneceſſary to remark. Franco ſpeaks of this method, but in a curſory manner.—Marcus Aurelius Severinus practiſed it; he ſays he performed it with ſucceſs on a friar and a citizen of diſtinction in the town of Tarentum. The ſenſations of theſe unfortunate patients may be readily conceived,

and

and humanity bids us hope their fellow ſufferers were few.

The cauſtic appears to be of later date. Sabatier ſuppoſes Hildanus to have been the firſt author who takes notice of curing a Hydrocele by the application of a cauſtic. But it appears that, two hundred years prior to Hildanus, Guido de Cauliaco takes notice of the uſe of cauſtics in two different modes, one after the inciſion—Cum phlebotomo aperio & aquam extraho, deinde ad conſumendum folliculum, modicum arſeneci appono cum xylo & cotone & poſt caſum æſcharæ, conſolido & firmiter ſigillo, tract. 2d. doct. ii. cap. 7. He took this practice, he ſays, from Avicenna and Halyabbas; he then adds—Nonnulli vero, ut Magiſter Petrus de Orlhiaco, cauſtico & corroſivo ſuper pectinem locum aperiunt uſque ad didymi vacuitatem, poſtea perforando, ducendo caudam ſpecilli uſque ad locum aquæ, ipſam extrahunt, & poſt caſum æſcharæ

charæ conſolidant & ſigillant, alii autem cauterio actuali predictam operationem perficiunt, ibid.

Wiſeman made uſe of cauſtic for the ſame purpoſe; he relates his having applied it to a very large Hydrocele, a copious quantity of water and bloody matter were diſcharged, the wound was dreſſed with a mild digeſtive: The following night the patient was attacked with fever and pain in the abdomen. The dreſſings were continued till the cyſt entirely ſloughed.—This patient had alſo a Hydrocele on the other ſide, which was divided with a cutting inſtrument; the ſymptoms were nearly equally violent till the ſac digeſted off, which happened in about twelve days. The cure was ſooner completed by the ſecond proceſs than by the firſt, and Wiſeman obſerves, the ſuppuration of the cyſt, ſo neceſſary for the radical cure, is not leſs certain by the inciſion than by the effect of the cauſtic.

Some

Some modern authors recommend the cauſtic for the radical cure of the Hydrocele. Dionis adviſes to apply a line of cauſtic the length of the tumor, and to cauſe the ſac to ſuppurate; his commentator De la Faye is of a different opinion, and ſays, that the inconveniences which practitioners have experienced from the uſe of cauſtics, have cauſed them to be laid aſide; but he does not ſpecify of what nature thoſe inconveniences were.

Garengeot mentions ſeveral objections to the uſe of cauſtics; he ſays the action of them is ſlow, and not ſufficiently powerful, yet that they frequently are extended to a larger ſurface than is meant; that an inſtrument muſt afterwards be uſed to divide the eſchar, and that the cauſtic particles ſometimes mixing with the water of the Hydrocele, communicate their corroding qualities, and produce irreparable miſchief. The laſt objection does not appear to have much weight,

weight, and indeed is completely contradicted by another practitioner, who recommends the application of a cauſtic the length of the tumor, then to divide the eſchar down to the ſac; after which he adviſes a freſh application of cauſtic to the ſac, and does not fear any harm being communicated to the teſticle, becauſe ſo ſoon as the cauſtic meets with the water, its power and action are blunted and ceaſe.

The application of a large cauſtic continued in uſe, for a conſiderable time, among many practitioners. Mr. Gooch ſucceeded equally in the cure of Hydroceles by removing an oval piece from the ſcrotum, and diſſecting away the tunica vaginalis, as by the application of a cauſtic on the tumor; but, for reaſons which he has aſſigned, he preferred the former.

Heiſter appears to have ſeveral times uſed it with ſucceſs.—Sharp ſays he has ſeen material ill effects ariſe from it; he applied to a large

large tumor a cauſtic, an inch broad and ſix inches long, the day after he divided the eſchar and let out the water; from the third to the ninth day the patient complained of great pain in the part, in the back, and kidnies; the ſymptomatic fever was violent, and there was no ſign of digeſtion in the wound. Theſe ſymptoms more or leſs continued to the thirty-third day, when the patient grew better; but two abſceſſes were formed, which it was neceſſary to open. The patient got well in about ſixty days. This caſe certainly does not tell in favour of cauſtics for the cure of Hydroceles, yet the greateſt part of the bad ſymptoms related probably aroſe from dividing the eſchar, and letting the air have acceſs to the teſticle; if the ſcrotum had been ſuffered to contract and throw off the ſloughy membrane by degrees, theſe ſymptoms, if they had ariſen at all, would have been much more moderate.

Cauſtics have not always been employed with the ſame views; inſtead of being uſed to open Hydroceles through their whole length, as is done by a cutting inſtrument, ſome have propoſed to make a ſmall opening in the middle of the tumor, ſufficient to diſcharge the water, and to excite in the internal part of the ſac an inflammation and ſuppuration; after which an adheſion would take place between the teguments and the teſticle. This method has been practiſed a conſiderable time in this country. The late Mr. Elſe has left a well written account of it. The method which he recommends is as follows: "To lay a ſmall cauſtic upon the anterior and inferior part of the ſcrotum, ſufficiently large to produce an eſchar about the ſize of a ſhilling, which is intended to affect, and, if poſſible, penetrate through the tunica vaginalis. Sometimes immediately after removing the cauſtic, ſometimes within twelve

or twenty-four hours, the patient begins to complain of pain in the ſcrotum and loins, has now and then ſome cholic pains, the pulſe a little quickened, and the tongue whitiſh; at different periods of time after removing the cauſtic, an alteration is perceptible in the ſcrotum; the tumor feels more tenſe or hard, in a few days the eſchar of the ſcrotum will looſen and come away, expoſing to view the tunica vaginalis, which bears evident marks of its having been affected by the cauſtic, and being prepared to ſlough off. As the cure proceeds, the ſloughy tunica vaginalis will project more through the orifice in the ſcrotum; if the water be diſcharged by puncture, the ſcrotum by degrees collapſes, and the orifice in it is filled up with ſlough, which prevents the acceſs of external air to the teſticle. Theſe ſloughs continue to come away with the dreſſings daily, for about *four*, *five*, *or ſix weeks*, and in

proportion

proportion to their diſcharge the hard tumor of the ſcrotum leſſens. Whoever will carefully attend to the ſeveral appearances that accompany this method, muſt be ſatisfied that the cauſtic excites an inflammation of the tunica vaginalis, which ſpreads through the whole of it, in conſequence of which the *entire membrane ſuppurates and comes away in ſloughs.*"

This method was certainly a great improvement on the former manner of applying the cauſtic; by not dividing the eſchar, and no air being admitted, the inflammation was not violent; but, though preferable to many of the other operations, it appears to be in itſelf extremely exceptionable, as it cauſes an unneceſſary deſtruction of the parts, and produces a tedious, painful, and offenſive ſore: for it is evident, from the paſſage which I have quoted, that it was Mr. Elſe's intention, and he generally ſucceeded in it, to

produce a complete ſlough of the whole tunica vaginalis.

THE TENT.

THE uſe of the tent for the cure of Hydroceles is not of very old date. It occurs firſt in the works of Franco, who ſeems to have had great confidence in it. An opening he recommends to be made in the ſcrotum of two or three inches; but the length of the inciſion muſt depend on the age of the patient and the ſize of the tumor. This wound, he obſerves, muſt be kept open with a tent of lint, linen, or ſponge; the larger the opening, and the longer time it takes to heal, the greater is the certainty of the complaint not returning.

Pare, deſcribing the ſame method, ſpeaks of it as having been ſucceſsfully uſed by ſome; but which himſelf had not practiſed, as indeed is evident from the indiſtinct and imperfect

account of it which he has given. He appears to prefer the ſeton.

The method of uſing the tent is deſcribed by Guillemeau in this manner—The tumor is to be opened in its upper part by a right line, the inciſion ſhould not be large, and ſhould penetrate into the cavity where the water is collected, great care being taken not to injure the teſtis or the ſpermatic veſſels; the tent is then to be introduced.—The opening he adviſed to be made in the upper part of the tumor, as leaſt likely in that part to injure the ſpermatic veſſels; but this practice probably aroſe from an idea, that the water of the Hydrocele came from the abdomen, and found a paſſage by the ſpermatic veſſels, and that the cicatrix in that part would prevent its reproduction. If this method be followed, water and matter muſt be collected at the bottom of the tumor.

Covillard, in his account of the different

methods of curing the Hydrocele, does not forget the tent; he firſt ſpeaks of the place where the inciſion ought to be made; Paulus Egineta and Celſus, he ſays, adviſe it to be done from the middle of the ſcrotum to the groin; while Avicenna and Gulielmus e Saliceto wiſh it to be made in the lower part. Here he appears to be rather miſtaken, as neither of thoſe authors ſay a word on the ſubject of the tent. Covillard indeed recommends the inciſion to be made nearly the length of the tumor, and to take away part of the cyſt, by which means his operation did not greatly differ from the inciſion which was practiſed by the authors he has quoted; he then adviſes to apply a large and long tent of lint, and, to prevent any return of the complaint, the wound is to be kept open a conſiderable time by means of tents armed with digeſtives: he concludes with ſaying this method of operating is very certain, but

is not free from danger in ſome habits, and may be followed with inflammation and gangrene.

The tent was in uſe at the time of Nuck; it was then the moſt common operation. Ruyſh, his compatriot and contemporary, ſpeaks of it in the moſt poſitive manner, and ſhews that he had particular experience of it; he ſays, when a Hydrocele is opened by a trochar, or lancet, the tumor ſoon appears again: but, if an opening be made in the ſcrotum in the upper part and on one ſide, and a tent is introduced covered with ointment mixed with red precipitate, till a gentle inflammation, followed by a moderate ſuppuration, has rotted the membrane in which the water is contained; and, if this membrane be taken away piecemeal, he obſerves, it is a perfect cure, as he has ſeveral times experienced. The authority of Ruyſh, who was well acquainted with ſurgical buſineſs, and

held a diſtinguiſhed rank among anatomiſts, is not to be diſregarded; yet how can we conceive ſucceſs to have followed if the inciſion was made in the upper and lateral part of the Hydrocele? Is it not probable that a collection of matter muſt have been formed in the lower part of the tumor, from which there could have been no depending opening by the wound, as it was directed to be made?

Modern inſtances might be brought of violent inflammatory ſymptoms following ſuch practice, attended with mortification, and even a fatal termination. If the tent be uſed, the opening for it ſhould undoubtedly be made in the lower part of the ſcrotum; one of the firſt and moſt uſeful principles in ſurgery is to gain a depending opening for matter, or any fluid which we wiſh to diſcharge, and is particularly applicable in this caſe, where a contrary practice muſt be productive of the

worſt

worſt conſequences from the extreme irritability of the parts concerned.

Other authors have recommended the tent with little variation, ſo that it is obvious that the uſe of the tent for the cure of Hydroceles was long practiſed. It does not, however, appear to have been in uſe among the French ſurgeons before the middle of the ſixteenth century, and I do not find it after the beginning of the preſent, except in Heiſter, who rather deſcribes than adviſes the operation; but, if it was abandoned by the French, it continued to be the practice of the Italians, as it is much recommended in a work intitled, Pratica delle piu difficili operazïoni di chirurgia che reguardono il Lithomomo e l'occuliſta; printed at Rome 1723, in octavo. This is the work of Jerome Marini, and, if we take the opinion of Haller, is a very moderate compoſition. Marini adds nothing to the manner of uſing the tent, except that it

ſhould be armed with medicaments of different qualities, according to the different ſtates of the treatment.

Dr. Monro, in later times, conceived a proceſs which had ſome analogy to the uſe of the tent. This was to irritate the anterior part of the ſac by leaving the cannula ſome time within the cavity, but the conſequences of them were very different; the tent was intended to cauſe a ſuppuration of the ſac, and the external ſurface of the teſticle, at leaſt the tunica albuginea. On the contrary, the intention of Dr. Monro was only to excite ſuch an inflammation as might be followed by a coheſion of the parts; as he had often ſeen Hydroceles cured, in a manner ſpontaneouſly, by an inflammation which was accidentally produced, he conceived he might bring about ſuch an inflammation by art; but he was aware that this muſt require great care, and

that

that the ſurgeon ſhould always be able to regulate the degree of inflammation; he therefore rejected irritating remedies, of which he could not immediately prevent the effect. He thought he ſhould ſucceed better by the cannula of a trochar left in after the evacuation of the water, as the cauſe of irritation might be removed whenever it was thought that ſufficient inflammation was produced. Monro never practiſed this plan himſelf, and he recommends it with great diffidence; the hint, however, was ſufficient to induce Mr. Pott to try it, and to ground on it his operation of the ſeton.

Perhaps Monro's plan may be traced in Fabricius ab Aquapendente; after having advanced that the Hydrocele is ſometimes cured by a ſimple inciſion in the lower part, although it be ſuffered to cloſe again immediately, Fabricius adds, that ſome practitioners keep the inciſion open during ſome days

with a cannula of ſilver; undoubtedly they only propoſed to preſerve an opening by which the water, if any ſhould collect, might find a free exit; but every one muſt ſee that a cannula remaining in the cavity of the tunica vaginalis for ſome days, muſt rub and fret the teſtis, and the inſide of the tunica vaginalis, and bring on an inflammation. If we believe Fallopius, Galen has adviſed to leave a cannula in the ſac of a Hydrocele during ſome days; but on conſulting the works of that author in the place quoted, there is no expreſſion ſufficiently preciſe to determine that to have been his intention.

This method has not much obtained in practice; Mr. Pott tried it, and aſſures us that it was not followed by bad conſequences: he only obſerved that the preſence of the cannula was very inconvenient, and that the inflexibility of it hurt the teſtis when the patient moved with inattention. The tent and

bougie

bougie which he ſubſtituted in its place were not nearly ſo incommodious, but the effects produced by them were very uncertain; and, on the whole, he was of opinion, that it was not to be depended on.

Mr. Warner made ſome trials of the tent, of which he has related four caſes; in the firſt he introduced a piece of ſponge which continued twenty-four hours without producing any ſenſible effect, and was ſuffered to remain to the third day, when the ſcrotum became hard and inflamed; the fourth day a ſmall quantity of matter tranſuded; this diſcharge continued to increaſe during ten days, after which a little abſceſs formed which furniſhed ſome matter, the diſcharge then diminiſhed, and the membranes contracted an adheſion to the teſtis.

This is the moſt favourable caſe which Mr. Warner has recited, and he pronounces it an eaſy, ſafe, and ſimple cure; but we

muſt remark that there was an abſceſs formed, which was opened by an inciſion.—In the ſecond caſe the inflammation roſe to a much greater height; the third day after the operation the patient had ſickneſs, attended with vomiting and fever; the fifteenth or ſixteenth day the ſcrotum burſt in two places near the original puncture, from which openings there iſſued a conſiderable quantity of matter mixed with a ſlough.—In the third inſtance the patient was attacked with a rigor on the eleventh day, the inflammation increaſed to a great degree, and matter was formed which burſt its way through the ſcrotum; yet, notwithſtanding the violence of the inflammatory ſymptoms, there appears to have been a beginning freſh collection of lymph in a portion of the tunic which had eſcaped the inflammation. — In the fourth caſe the ſymptoms were not much more favourable, the ſcrotum impoſthumated and

burſt,

burſt, and a great deal of fetid matter was diſcharged.

As this is a method which I have never practiſed, I have been more particular in relating the practice and opinions of others; and, from what may be fairly collected from the general account, I conceive the operation does not ſtand in a very favourable light.

THE SETON.

No traces of the uſe of the ſeton for the cure of Hydroceles are to be found among the ancients; this remedy, which was invented by the Arabians, was not applied to this diſeaſe till after the time in which they wrote. The firſt mention of it is in a work of Guido de Cauliaco in 1363; he ſays the Hydrocele may be emptied by means of a ſeton, which may be done in this manner: the tumor is to be taken hold of by a pair of forceps, flat and pierced with an opening

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near the ends of the blades; through theſe a needle is to be paſſed, carrying a ſeton, which is to be left behind until the water is entirely evacuated.

Fallopius ſpeaks of this method as new, but does not approve of the forceps recommended by Guido; he thinks it ſufficient to pierce through the Hydrocele with a proper needle. Fabricius ab Aquapendente alſo mentions the ſeton, though he does not ſuppoſe it likely to produce a radical cure in every caſe.

We meet with the ſame doubts of the certainty of ſucceſs from this operation in a Treatiſe on Herniæ by Franco. This author aſſerts that the moſt certain method is to extirpate the cyſt along with the teſticle, or, in other words, to caſtrate, as after any other operation the tumor is ſubject to return at the end of five or ſix months or ſooner. The manner in which he adviſes the ſeton to

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be paſſed is the ſame which is mentioned by Guido and Fallopius, and ſays it may be done either with the forceps, through which the needle may be paſſed, or the needle may be uſed alone; but then it muſt be curved. When the firſt method is uſed the needle ſhould be made red hot, and paſſed quickly, that it may not cool in traverſing from one opening to the other. Sometimes it is neceſſary to uſe the other method, as, when the bag is very full and much diſtended, the forceps would require to be pinched with too great force in order to bring the blades ſufficiently cloſe, and he obſerves that no means ought to be neglected to prevent inflammation; if it riſes too high the ſeton muſt be removed, if not, the ſeton is to be only moved every day, to favour the diſcharge of the water. Notwithſtanding the ſtrange awkwardneſs and inconvenience of conveying a ſeton by means of the forceps,

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it was the method which Pare made uſe of, and appears to have been his common practice, as it is the firſt of which he has given a deſcription.

The ſeton, though not generally adopted, continued in uſe in the time of Covillard; it was conveyed by means of a needle half a foot in length, the point heated red-hot, and carrying ſilk nine or ten times double; he prefers this method, becauſe it is often difficult, from the ſize of the tumor, to make the holes in the blades of the forceps meet; but ſays this method is not always ſucceſsful, owing to the inflammation of the openings not permitting the water to find a paſſage out. Other authors ſpeak of the uncertainty of the ſucceſs of the ſeton as a radical cure, but recommend it as a palliative cure in Hydroceles of the tunica vaginalis; others think it only applicable where the water is diffuſed through the cellular membrane.

Heiſter

Heiſter, the faithful reporter of all the methods of operating which are known to him, in treating of the radical cure of the Hydrocele, does not omit the ſeton; he deſcribes it as done with a needle; but adds, that the ſeton ſhould be imbued with digeſtive and cauſtic medicines, and adviſes it to be ſuffered to continue in the ſac a month, as the former failure of ſucceſs he aſcribes to not letting it remain long enough, by which, ſufficient inflammation was not excited to produce the adheſion of the membranes with the teſticle: but, as by this proceſs a knowledge of the ſtate of the teſticle is not procured, he ſays, practitioners in general prefer other methods.

The objections which Heiſter made are the ſame which ſince occurred to Mr. Douglas:—he obſerves, that it is not neceſſary to inſiſt further on the uſe of the ſeton, for, beſides that the application of it is extremely

painful, it does not produce a ſuppuration of the cyſt, and gives no opportunity of knowing the ſtate of the teſticle; the action of it alſo is ſo ſlow, and productive of ſo much irritation, that he does not think it an adviſable operation.

The diſadvantageous light in which almoſt all the practitioners had left this method, did not prevent Mr. Pott from making trial of, and adopting it. The diſguſt which he had conceived for the painful operation of inciſion, and the unneceſſary deſtruction of the ſac, even in the beſt way of employing the cauſtic, led him to endeavour to ſteer clear of both, by a method which ſhould not be painful in the execution, and ſhould only procure an adheſion of thoſe parts which the cauſtic made neceſſary to come away. Having proſecuted Monro's idea of letting the cannula remain, Mr. Pott was convinced that a foreign body might be endured within the tunica vaginalis without

without risk or danger; but, as the cannula was found inconvenient and troublesome, he was induced to substitute the seton, which was calculated to lie smoother and softer.—I attended his first essays, which were as follow:—After having pierced the Hydrocele with a middle sized trochar in the lower part, and let out the water, he introduced through the cannula, an eye-probe, carrying a seton of ten or twelve threads of candlewick cotton; he passed this probe the whole length of the sac against the upper part, and there, on the blunt end of the probe, made an incision sufficient to let it out with the seton which it conveyed; he then cut off the seton close to the probe, and tied the two ends of it loosely together; the wounds were covered with a pledget. The morning after, the seton was found to have contracted such firm adhesion to the inside of the sac and the tunica albuginea, that an endeavour to detach it would

have cauſed great pain; but this was not neceſſary, as, while untouched, it remained without any inconvenience to the part.

In leſs than twenty-four hours after the operation the ſcrotum and teſticle began to inflame, and put on the appearance of a hernia humoralis, and was treated in the ſame manner as is uſual in that complaint, with fomentation and poultices, and ſupported in a bag-truſs; attention being paid to keep the patient cool.

The adheſion of the ſeton to the albuginea continuing firm, it was not meddled with, till, the inflammation leſſening and the tumor ſubſiding, it became looſe. This was generally in about a fortnight; by this time the parts had contracted a firm and ſolid coheſion; the ſeton was then withdrawn, and the orifices healed with a ſuperficial pledget.

Mr. Pott practiſed this method on many perſons, and ſucceeded very well. The patients

tients kept their beds a few days, after which they ſat on a couch till the cure was complete, which was uſually in three or four weeks; during which time no other regimen was neceſſary, than an inflammation of the parts from any other cauſe would require. However, Mr. Pott ſoon diſcovered that the manner of performing the operation might be improved; he found that it was extremely difficult to cut on the end of the probe which carried the ſeton, and required the aſſiſtance of another perſon. He remarked that the cotton paſſed with difficulty, and by rubbing on the tunica albuginea gave pain; that the ſeton, being made of cotton, adhered in ſome inſtances too long and too firmly; that, from the intimate union of its parts with each other, it could not be brought away but entire, which unneceſſarily prolonged the cure, and in two caſes it was neceſſary to make an inciſion to ſet it free.

Theſe inconveniencies led him to change his plan, and were completely obviated by the inſtruments he latterly made uſe of. Mr. Pott was always averſe to multiply inſtruments in any operation, but in this he found it neceſſary to make uſe of three; the firſt was a trochar, the dimenſion of whoſe cannula was about one fourth of an inch; another cannula, called the ſeton-cannula, made of ſilver, of ſuch diameter as juſt eaſily to paſs through the cannula of the trochar, its length five inches, and a probe ſix inches one half long, having at one extremity a fine ſteel trochar point, and at the other, an eye which carried the ſeton; which ſeton conſiſted of juſt ſo much ſtrong coarſe white ſewing ſilk as would without difficulty paſs the cannula, but at the ſame time would fill it. Of late years he made uſe of a much ſmaller ſeton, and found it to anſwer the purpoſe better, giving more room to the diſcharge of any fluid

fluid which might be collected, and being more eaſily removed at the proper time.

With the trochar the inferior and anterior part of the tumor was to be pierced, as in the palliative operation. As ſoon as the perforator was withdrawn, and the water diſcharged, the ſeton-cannula was paſſed through that of the trochar, until it reached the upper part of the tunica vaginalis, and was felt in the upper part of the ſcrotum; this done, the probe armed with its ſeton was conveyed through the latter cannula, the vaginal coat and integuments were pierced by its point, and the ſeton was drawn through the cannula until a ſufficient quantity was brought out by the upper orifice; the two cannulas were then withdrawn, and the operation was finiſhed. It was executed in two or three ſeconds of time, and with little more pain than is felt in the palliative operation.

By this method every advantage of the

former operation is retained, and every inconvenience which it was liable to is removed: the ſeton cannula, by its firmneſs, bears hard againſt the place where the ſeton ſhould be brought out; the trochar point of the probe is prevented from deviating by its confinement, and its point pierces through the ſkin immediately, and exactly in the place intended; while the ſeton, by paſſing through the cannula, is prevented from rubbing rudely over the teſticle.

The ſymptoms, which this manner of placing the ſeton cauſed, were nearly ſuch as followed the former method, and required the ſame treatment. When the ſwelling was diminiſhed, and the parts regaining their natural ſtate, which happened about the tenth or twelfth day, the ſeton was gradually removed; the adheſion always made ſome force neceſſary to bring it away, but a few only of the threads being withdrawn at a time,

time, the adhesive resistance was small; the dressings were, as before directed, a pledget over the whole scrotum.

I have been induced thus fully to relate Mr. Pott's plan, as I find it has been sometimes either not understood, or not sufficiently attended to; some persons, though intending to pursue the same idea, having acted very differently from his directions, and others having advised alterations which, in fact, are a total subversion of its principles.

The process which he recommends must be allowed to have been carried to a great degree of perfection, and, if the operation be performed without deviating from the directions he has laid down, I am convinced it will be found preferable to any of the methods which have been usually practised in this country. I had opportunities of seeing many of these cases with him, and have myself often practised it; but do not recollect

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more than two inſtances in which the ſeton failed to produce a cure. I muſt therefore conclude, that the want of ſucceſs which has been attributed to it, muſt have ariſen from a miſapprehenſion of the proper manner of conducting it; particularly I muſt remark a great miſtake which has been made in treating it like a common ſeton, by *drawing it upwards and downwards once or twice a day*, and which is the more likely to miſlead others as it is recommended by a modern writer of conſiderable reputation. If we take into conſideration the nature and texture of the parts which are to be thus rudely treated; that there is no gland or viſcus in the human frame ſo ſuſceptible of inflammation, and which ſwells inſtantaneouſly to a greater degree, ſuch treatment muſt appear likely to produce exquiſite pain and irritation.

I muſt alſo take the liberty to reply to

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ſome objections, which Mr. Bell has made to the ſeton; one of which is, that it does not give an opportunity of examining the ſtate of the teſticle. I am at a loſs to know what better information of its ſtate any man of ſcience would deſire, than he could acquire by the touch, after the water is evacuated, which is always done previous to the introduction of the ſeton when the operation is *properly performed*; but not, when the trochar is paſſed into the upper part of the tumor, as Mr. Bell recommends, from having found difficulty in paſſing the ſeton needle, while the vaginal coat is in a collapſed ſtate.—If Mr. Bell had introduced the ſeton-cannula, which Mr. Pott has deſcribed, I apprehend he would have found no ſuch difficulty.

By the trochar being introduced at the lower part, the bag is completely emptied, and the teſticle is ſubmitted to the moſt perfect and ſatisfactory examination; not to

mention that the palliative cure is, or ought to be, in general performed at leaſt once prior to any radical cure being attempted, which gives an additional opportunity of forming our opinion of it. It would be unfortunate indeed for mankind, if it were neceſſary to divide the ſcrotum, and lay bare every teſticle which requires examination, before we could determine whether it be or be not diſeaſed.

Another objection which this gentleman has made, and has given as a reaſon why the ſeton ſhould be entirely ſet aſide is, that it is ill ſuited for evacuating hydatids: his preciſe words are, "It *frequently* happens that the water of a hydrocele *is contained in a number of hydatids*; a circumſtance which cannot be diſcovered previous to the opening of the tumor. And as it will be readily admitted that the method of cure by ſeton is ill ſuited for evacuating hydatids, this of itſelf

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is a very material objection to the practice. So that upon the whole, although the seton in every other respect should be equally eligible with the simple incision, which, for the reasons formerly given, I think it is not, yet the two last objections we have adduced are sufficient reasons for *setting it entirely aside.*" That hydatids are sometimes formed in various parts of the body must be allowed; but I will appeal to any man of experience, whether they frequently happen in the tunica vaginalis. During near thirty years attendance at a large hospital, besides the private practice of Mr. Pott and myself, I may presume that as great a variety of Hydroceles have reached my notice as most individuals have seen; yet I do not recollect a single instance of hydatids in the Hydrocele, though I have often met with them *floating in* collections of fluid in the abdomen, in the thorax, under the fascia of the thigh, and in other parts;

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but granting that inſtances of the kind may happen, ſuch particular caſes might require an inciſion to let out hydatids which would not paſs through a cannula; but that an operation, recommended by one of the ableſt Surgeons who has ever practiſed in this or any other country, ſhould be entirely ſet aſide on account of a deficiency in demonſtrating that which it palpably points out, or the poſſibility of the occurrence of a phenomenon, does not appear to me extremely reaſonable.

The operation, as Mr. Pott practiſed it, ſtands on the moſt rational ground. The whole of his end and aim being to produce a coheſion without deſtroying the tunic, or cauſing it to ſlough. This the ſeton certainly effected; but it muſt be obſerved that it went beyond the intention; being a ſolid body, an adheſion alſo took place between that and the part of the ſac with which it was in contact, and a

ſuppuration,

ſuppuration, at leaſt in the track of it, became neceſſary to looſen ſo as to make it capable of being removed; add to this, that it was certainly productive of more inflammation than was requiſite for the coheſion of the tunics, by which fever was ſometimes produced, and abſceſſes were ſometimes formed; and that the matter which was collected and diſcharged was always peculiarly offenſive, owing to the putrid diſpoſition it received from the air, which found a ready entrance through the orifices made by the ſeton.

Whoever conſiders what has been related, muſt obſerve, that all the methods uſually employed to obtain a radical cure of the Hydrocele, when they have proved effectual, have been generally attended with great inconveniences, and ſometimes with very alarming danger, both to the functions of the diſeaſed

diſeaſed part and to the life of the patient; and all this riſk and danger were incurred to get rid of a complaint in which neither life nor general health were materially intereſted. No man can reflect on theſe circumſtances without wiſhing that it were poſſible to obtain the end by a milder proceſs.

It is obvious that the inflammation is carried too far by continued irritation, and that, if the juſt and proper inflammation was raiſed by a cauſe which could be immediately removed, it muſt be preferable to letting any irritating foreign body remain, to be caſt off by a further proceſs, after the original intention, that of exciting merely an adheſive inflammation, had been anſwered; and it muſt be evident to every man of common underſtanding, that after the inflammation has completely taken place over the ſurface of the tunica vaginalis, that the continuation of the cauſe of it muſt be not only uſeleſs but highly prejudicial.

Impreſſed

Impreſſed with theſe ideas, I turned my thoughts to fluids, as alone being capable of cauſing an immediate irritation, without the neceſſity of their lodging and remaining in contact with ſuch inflammable ſurfaces; the only difficulty remained in ſelecting the proper fluid, which ſhould do the buſineſs effectually, yet moderately.

INJECTIONS.

On further inveſtigation, I do not find that injections for the cure of the Hydrocele were in uſe among the early practitioners; nor have I been able to trace any account of them till of late years.

Dr. Monro attributes the firſt uſe of injection for this purpoſe to an army ſurgeon of his own name. Mr. Monro firſt made uſe of ſpirits of wine, which cured the complaint; but the inflammation was ſo violent

that he thought it expedient to try a milder injection; he accordingly ſubſtituted wine, which anſwered the purpoſe as well, with leſs violence: but what the quantity was, or how the injection was uſed, that is, how long it was ſuffered to remain in the ſac, does not appear.

Mr. Sharp, in his treatiſe on operations, relates a cure of a Hydrocele, which was attempted with ſp. vin. but was not attained without danger. The pain which immediately followed the operation was violent, and continued to increaſe to the day after, when the tumor became hardened and ſwelled to a great degree. After remaining a month, it terminated in two abſceſſes on the anterior part of the ſcrotum. Mr. Sharp had been induced to make this trial, but he does not appear to have repeated it, nor do we find any thing relative to it in his critical enquiry on the ſtate of ſurgery, publiſhed more than ten years after, which

is a ſort of proof that it was not practiſed in England at that time. Indeed the greater part of the Engliſh authors who have written profeſſedly on the different methods of curing the Hydrocele do not mention it. Mr. Douglas ſpeaks of it only to ſhew his diſapprobation of the practice; he ſays that the vaginal coat is at ſuch a diſtance, and the ſurface of the teſticle ſo unequal, owing to the epididymis, that it ſeems impoſſible that theſe two parts ſhould touch with exactneſs. Le Dran conceives that injections cannot ſucceed, becauſe it would be impoſſible to bring the ſides of the cyſt together ſo as to touch, and beſides that, the proceſs would be liable to bring on inflammation. Theſe reaſons, particularly the laſt, had no weight with me, becauſe it is the very circumſtance which is to make the cure.

Mr. Pott alſo, in his treatiſe on the Hydrocele, ranked injections among thoſe opera-

tions which, "happily for mankind, were laid aſide." From the deference, which I had always, with great reaſon, paid to his experience and abilities, this, I confeſs, was diſcouraging; but I have now the ſatisfaction to ſay that he lived to alter his opinion on the ſubject, and that it was his intention to have made trial of them.

As I had frequently ſucceeded in procuring an adheſion and conſolidation of parts in ſinuſes and other large cavities, by injections of various kinds, without cauſing great inflammation, and had by thoſe means avoided the neceſſity of the deſtruction, or extenſive diviſions of the ſkin and integuments, which ſhould be avoided as much as poſſible, not only in the neck and face, or where we particularly wiſh to preſerve beauty, but in every part, as the loſs of true ſkin is never perfectly reſtored; I conceived the cure of Hydroceles might be effected by the ſame gentle

gentle means, without deranging, in any great degree, the tender and ſenſible organs which are the ſeat of the diſeaſe, and I was determined to make the experiment. While conſidering the beſt method of effecting my purpoſe, I was not a little pleaſed to find by Mr. Sabatier's account, that though injections had been neglected in England, they had been often uſed in France, and I learned that experiments had been made on a great variety of injections; that ardent ſpirits and ſolution of cauſtic had been tried, which had cauſed great inflammation and much miſchief; but that more mild injections had been uſed with ſucceſs.

The proper object of all attempts to cure the Hydrocele without deſtruction of the ſac, is to produce ſuch adheſion of the diſtended vaginal coat of the teſtis to the gland, as ſhall annihilate the cavity in which the water conſtituting the diſeaſe is contained. We know that this effect is produced

by a certain degree of inflammation, and are unacquainted with any other proceſs, either natural or artificial, by which it can be brought about.

Injections introduced within the tunica vaginalis, into the urethra, or into any cavity of the body, natural, or formed by diſeaſe, are certainly capable of doing miſchief; but the miſchief muſt ariſe from the nature of the injection: if it be violent or irritating it may produce too great inflammation. The cauſtic and highly ſtimulating injections which had been moſt injudiciouſly made uſe of, and retained an unneceſſary length of time, undoubtedly did harm, and were the cauſe of bringing injections in general, and for the cure of Hydroceles in particular, into diſcredit; but it is extremely abſurd to infer from ſuch inſtances, that all kinds of injections muſt be pernicious. If Mr. Sharp, inſtead of being alarmed at the bad ſymptoms which

which ſucceeded the uſe of ſpirits of wine, had diluted it, he would probably not ſo eaſily have decided againſt injections. In the uſe of injections we are not limited to any degree of ſtimulus. Injections may certainly be prepared ſo corroſive as to inflame, and even to diſſolve the moſt indolent parts; on the contrary, they may be uſed ſo bland as not to offend the moſt ſenſible membrane or ſurface in the human body, and they may be made to produce any intermediate effect. There is no kind of ſtimulus which admits of ſuch various modifications.

Other great advantages of injections are, that they apply themſelves equally and univerſally over the whole cavity into which they are thrown, and when they have remained long enough to produce the requiſite ſtimulus, they are eaſily and completely diſcharged. Theſe are eſſential effects which cannot be derived from any ſolid body.

The injection, which after ſome conſideration I fixed on for the purpoſe, was wine, which I made choice of for ſeveral reaſons. I found that it had been uſed with ſucceſs in France; I had experienced it to anſwer well in procuring adheſions in other parts. The ſtrength of wine is never ſo great as to render it an unſafe remedy, and it may be readily lowered according to the different ſenſibility of the parts. Thus a vinous injection appeared capable of producing all the good effects which could be deſired, with ſcarce a poſſibility of doing harm. The ſucceſs which has attended it has more than anſwered my expectation, and from every trial which I have made, I have no reaſon to wiſh for a different one. The pain which is produced is incomparably leſs than by any other operation; it does nothing more than is intended, and the curative effect, as far as my experiments have gone, is equally certain.

In

In my edition of Mr. Pott's works was introduced a circumſtantial account of all the experiments I had then made on the ſubject of injections for the cure of the Hydrocele. As practice is beſt illuſtrated by examples, they will be here repeated; and the method being rather new in this country, requiring therefore all the light which experience can throw on it, ſuch further caſes and obſervations as have ſince fallen within my notice will be added.

Case I.

A man, about fifty years of age, was taken into St. Bartholomew's hoſpital with a large Hydrocele of many years ſtanding. June 21, 1787, in the preſence of Mr. Pott, I paſſed into it a trochar, and let out a very large quantity of fluid of the uſual colour and conſiſtence. I found the tunica vaginalis remarkably

markably thickened and unpliable; to the feel not unlike tripe, or buff leather: the teſticle was much larger than the natural ſize. On conſidering every circumſtance, it appeared to be a very unfavourable caſe for any operation except the palliative: however, as I was deſirous to try the effect of injection, and there was no probability of doing miſchief, I filled it with port wine diluted with a decoction of red roſe leaves. The man felt not the ſmalleſt pain; after retaining it a few minutes, I ſuffered it to be diſcharged. The next day a ſmall degree of inflammation had taken place; the third day from the operation it was increaſed, and the whole ſcrotum conſiderably ſwollen: the patient continued abſolutely free from pain and fever. By way of precaution a poultice was applied, and he took an opening draught. On the ſixth day the inflammation continued, the ſcrotum much ſwollen,

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the patient without any other complaint. In a few days the inflammation leſſened, but the ſcrotum was almoſt as large as before the operation, and, to all appearance, it now contained a fluid. It ſeemed extraordinary that water ſhould be again ſecreted and collected in ſo very ſhort a time; yet, as it was not attended with any pain or inflammation, I concluded that it was poſſible; and, being the firſt attempt which I had made, I was rather inclined to think, with every one who had ſeen it, that the injection had failed, and that there was a freſh accumulation of water. Accordingly it was agreed that the operation by the ſeton ſhould be performed. Saturday, July 8th, he was brought into the theatre for that purpoſe; when, on examination, it appearing to Mr. Pott and all who were preſent that the ſize of the tumor was leſſened, he was ſent back to his ward. From that time the tumor

continued gradually to diminiſh till the teſticle was plainly perceptible, ſurrounded by the thickened tunica vaginalis. July 18 I examined with attention, and found it not only perfectly free from any freſh accumulation of fluid, but the teſticle leſs in ſize than when I firſt let out the water; and the patient being well in every reſpect, I diſcharged him.

On conſidering all theſe circumſtances I conceived that, if the method ſucceeded ſo well in this caſe, in which, from the ſize of the tumor, the duration of it, and the thickneſs of the vaginal coat, I had deſpaired of effecting a cure, there was every thing to hope from it in more favourable and more recent ones, and that it was infinitely preferable in every reſpect to any other operation I had ever ſeen attempted for the cure of Hydroceles. No pain, no violent irritation, nor fever ſucceeded; a gentle inflamma-

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tion only took place, attended with a moderate tumefaction, juſt ſufficient to produce an adheſion of the tunica vaginalis to the teſtis, without the tedious proceſs of ſuppuration, which, in ſome degree, is always the conſequence of any other operation.

Case II.

The next caſe which occurred to me was in June 1787, in the perſon of a gentleman, who ſhewed me a Hydrocele which he ſaid had gradually been increaſing during ſeveral months. The integuments were remarkably thin, and in every reſpect it was the reverſe of the caſe juſt deſcribed. He wiſhed to have the radical cure performed, and it appeared a very good ſubject for an operation. As he was a man of excellent underſtanding, and had applied his thoughts to ſurgical caſes, and more particularly to this which moſt

materially concerned himſelf, I deſcribed to him all the different operations which have been recommended for the cure of it, and pointed out what appeared to me their advantages and diſadvantages, that he might form ſome judgment, and chooſe which he would ſubmit to. He decided in favour of injection. After having evacuated about five ounces of yellowiſh fluid the teſtis felt larger than natural, but ſoft; I then threw in ſome injection more diluted than in the preceding caſe. He complained of ſome pain, on which account, after the injection had continued one minute, I ſuffered it to be diſcharged, and the pain ſoon ceaſed; when, leſt I ſhould not have done quite enough, I attempted to throw in ſome more, but air had got into the ſyringe, and I was rather foiled; however ſome went in, on which he again complained of pain, and I again diſcharged it, and withdrew the cannula.

nula. He continued to feel a ſmall degree of uneaſineſs, and went to bed. I ſaw him again in the evening, when he told me the pain had gradually ſubſided, and that he was then perfectly eaſy. I ordered a fomentation and poultice to the part, and an opening draught. The next morning a very gentle inflammation had taken place, the parts were moderately tumefied, and he felt very little uneaſineſs. The third day, being much the ſame, he choſe to get up; the fourth day, encouraged by eaſe and favourable accompaniments, he very imprudently exerted himſelf in moving a heavy table, by which he brought on his pain again, and the ſcrotum looked larger and more inflamed. This freſh acceſs was fortunately ſoon calmed, and the parts again gradually ſubſided; and, though he continued to ſit up, in nine days from the operation the gland bore to be examined as well as a ſound teſticle. In a few days after,

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the inflammation was entirely gone; and, what appeared a circumſtance very much in favour of this operation, as it is contrary to what happens after, I believe I may ſay, every other operation for this complaint, the teſticle was become perceptibly, to the patient as well as to myſelf, ſmaller than when I let out the water. Every one muſt allow that, after operations by which a ſolid foreign body is ſuffered to remain within the tunica vaginalis, the teſtis for a long time remains enlarged, owing to the great and unneceſſary quantity of inflammation excited, and to the duration of it. A fluid may undoubtedly be made ſo powerful, and retained ſo long, as to produce the ſame ill effects; I muſt therefore obſerve that the ſucceſs of the method which I am deſcribing will probably be found to depend on two circumſtances; the mildneſs of the injection, and the very ſhort ſpace of time

which

which I have proved to be ſufficient for its retention.

Finding himſelf perfectly well, he went to his country-houſe, where he caught cold, by remaining in his garden after rain, and had a very ſevere attack of fever; but notwithſtanding, the teſtis continued perfectly quiet and eaſy. May 20th, in the following year, I had an opportunity of ſeeing him again; when, on a careful examination of the parts, I was convinced that the teſtis was become of its natural ſize, that an adheſion had univerſally taken place between the tunics, and, in ſhort, that the cure was complete. I have had many opportunities of ſeeing him ſince, and he remains perfectly well.

Case III.

November 23, 1787, a young man ſhewed me a ſwelling of the ſcrotum, of a few

months duration, which I perceived to be a Hydrocele. After proper evacuations, I determined to attempt the cure by injection; I drew off a large tea-cup of ſtraw-coloured water, and found the teſtis rather enlarged, as uſual, but free from diſeaſe: I immediately filled the cavity with injection, which was kept in a couple of minutes; the patient complaining of ſome pain ſhooting up to his loins, it was diſcharged, and he went to bed. The next day I found him free from fever; he ſaid, he had felt ſome pain ſimilar to what he had felt during the operation; but the inflammation was not more than to be deſired; the ſcrotum gently diſtended, with a ſcarlet bluſh. I ordered a poultice and bag-truſs, and adviſed him, what I always recommend, not to ſuffer the ſcrotum to fall down between the thighs, but to ſupport it by a ſmall pillow, or by keeping the knees cloſe. The 26th, the

inflammation

inflammation was very moderate, he had no pain, nor had felt any ſince the ſecond day; it continued gently to increaſe, and ſeemed about its height on the 28th, the fifth from the operation: and two days after, it appeared to be gradually decreaſing; the patient during the whole time being entirely free from pain. December 4, the inflammation was diminiſhed, the tumor about half its original ſize. On the 10th, the ſeventeenth from the operation, all inflammation had left it, the adheſion of the membranes appeared complete, and the teſtis in a perfectly quiet ſtate.

Case IV.

On the ſame day that I injected the laſt mentioned Hydrocele, another caſe, exactly ſimilar in every reſpect, was put under my care; the age of the man nearly equal; his

 conſtitution,

conſtitution, the duration and ſize of his complaint, as nearly reſembling the other as poſſible. To give a fair trial to both methods, I paſſed a ſeton in this; the complaint proceeded very well, with moderate inflammation: the ſeton was gradually removed, thread by thread, as they became looſe; in about ten days the ſcrotum began to leſſen and collapſe; a ſmall abſceſs however was formed, the matter of which emptied itſelf by the lower orifice. On the whole, this caſe gave as little trouble, and ended as happily as the mode of treating it generally does. But I muſt moſt truly confeſs that it did not ſeem comparable to the other, in which the inflammation was more moderate, the duration of it leſs, and no abſceſs was formed.

Case V.

March 12, 1788, in company with the late Mr. Pitts, I let out the water from the Hydrocele of an elderly man, which had been tapped about five years before. It appeared large before the operation; but the quantity of water which was evacuated, and which measured considerably more than a pint, proved the cavity to have been more capacious than we had apprehended. The testicle was in a sound state, very little larger than natural; I threw in some injection, the patient felt no pain, and scarcely any extraordinary sensation, which induced me to use the remainder of the injection of a stronger quality, and to keep it in longer than usual. I had not enough to fill the cavity; however, by handling and altering the position of the parts, I caused it to be diffused over the whole cavity:

and, as I have obſerved, it is the chief excellence of this method, that we are enabled to irritate and affect every part equally, but moderately. From the capacity of the cavity, and the conſequent improbability of the parts lying in contact with each other, after having been ſo largely diſtended for ſuch a length of time, I formed a very unfavourable prognoſtic of the event. I ſaw him next morning; he ſaid he had perceived a ſlight pain in the afternoon, for about two hours, ſince which he had been eaſy: a ſmall degree of inflammation and tumefaction had taken poſſeſſion of the part. The 14th, the ſecond day after the operation, they were moderately increaſed; I began, from the appearances, to have hopes of ſucceſs, as the inflammation was juſt as I wiſhed: the 15th, appearances were ſimilar to thoſe of the day before: the 17th, the inflammation continued moderate and unattended with pain: the 20th, the

eighth

eighth from the operation, the inflammation and tumefaction were leſs, and continued gradually ſubſiding; he was ſoon after diſcharged well. I have had many opportunities of ſeeing him ſince, and he remains perfectly ſo.

As I have mentioned in the laſt caſe, that I threw up the injection ſtronger than uſual, I will take this opportunity to obſerve, that I have commonly uſed about two thirds of wine to one third of water; if the parts appeared inſenſible, and no pain at all was produced by the firſt quantity thrown in, I have withdrawn the ſyringe, and added to the proportion of wine; on the contrary, if the complaint was recent, and the parts irritable, I have increaſed the proportion of water, ſo that I have hitherto been principally guided by the degree of ſenſation which the patient has expreſſed. I have lately uſed pure water mixed with wine, and found it

anſwer as well as when aſtringents were added.

The inſtrument which I commonly uſe, is a pipe with a ſtop cock, which is made to fit into the cannula of a trochar, and to receive the beak of a ſyringe of a moderate ſize, which may be applied and removed at pleaſure. I have ſometimes uſed the vegetable bottle; but it has this inconvenience, that if it be not perfectly filled with the injection, it will, by its elaſtic power, draw in a quantity of air, which may prove very embarraſſing in the operation.

Case VI.

The next caſe which came under my care was a Hydrocele in the perſon of a middle aged man. As I was in ſearch after a ſafe and eaſy method of curing this complaint,

plaint, I was pleaſed to find an external application ſtrongly recommended as capable of diſcuſſing and curing it, by a gentleman of whoſe judgment and humanity I have the higheſt opinion. Although I had ſucceeded ſo well by injection, an external waſh being more eaſily applicable, I was induced to give it a fair trial. May 5, the tumor was wrapped in cloths, wet with a ſolution of ſal amoniac in acet. et ſpt. vin. After uſing it two days the patient complained ſo much of inflammation and irritation, attended with darting pains in the ſcrotum, that I was obliged to omit it for a day or two; after which time he uſed it lowered with a little water. May 27, after having continued this application nineteen days, I could find no ſenſible difference in the ſize or appearance of the tumor, except that the ſkin was corrugated and inflamed from the irritation of the application. May 30, no ſenſible alteration;

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he continued to uſe it, with now and then a ſmall interval, till the 22d of June, when, tired at finding no benefit, he would not ſubmit to any other operation, as was propoſed to him, but choſe to leave the hoſpital.

Case VII.

An intelligent gentleman, who had been in the medical line in India, ſhewed me a Hydrocele on each ſide; we talked over all the uſual modes of curing the complaint; but he did not ſeem ſatisfied with either of them. I mentioned the ſolution of the ſal amon. and recommended him to give it a fair trial. He accordingly applied it, as it is directed; but, as it happened in the inſtance juſt mentioned, it produced ſo much inflammation, that he was obliged to deſiſt. He afterwards uſed it for near three months,

months, at the end of which period, May 31, 1789, he again ſhewed me the tumors; but there was no perceptible diminution in their ſize.

Case VIII.

November 5, 1788, I took a young man under my care, who had apparently a Hydrocele; but it was one of thoſe caſes of which, on account of the tightneſs with which the coats enveloped the water, and from the thickneſs of the ſcrotum, we could not poſitively at once determine the nature: however, as I concluded it to be a Hydrocele, and, from its recent appearance, a favourable caſe, I immediately began to treat it with an external application of a ſolution of ſal amon. but after ſeventeen days, finding no kind of advantage, and the man being impatient and anxious to return to his friends, I deter-

I determined to uſe the injection. November 22, I let out about five ounces of clear fluid, found the teſtis in a good ſtate, though enlarged, which, as I obſerved, is frequently, I might ſay generally, the caſe. I then filled the cavity with injection, in the preſence of a number of gentlemen, and kept it in a few minutes; he complained of ſo little pain that I was apprehenſive, and I believe all who were preſent concluded, that what I had done was to no purpoſe; that is, that there would not be ſufficient irritation to produce the neceſſary inflammation. He continued without pain the whole of that day and the next; the third day he was perfectly eaſy, but a gentle inflammation had taken poſſeſſion of the whole ſcrotum, equally in every part: the 5th day the inflammation continued as before, and the ſwelling was ſo free from pain, that it had ſtrongly the appearance of a freſh collection of fluid; but, as this deception

ception had ſeveral times occurred to me before, I did not the leſs expect a cure. On the ſeventh day from the operation the appearances were very ſimilar, the man void of pain, the ſcrotum gently tumefied, from which time the ſcrotum began to corrugate, and the tumor gradually to decreaſe, till in leſs than three weeks it became of the ſize of the teſticle, when the water was let out. I kept him in the houſe till the 21ſt of December, to obſerve if any freſh accumulation took place, when, being perfectly well, he was diſcharged.

Case IX.

A gentleman was introduced to me by Dr. Grieve, with a Hydrocele which had been treated with the ſame diſcutient, and which he had found ſo painful that his ſurgeon was obliged to lower it; it was continued, as

ſtrong as he could bear, during five weeks, when the water, not being leſſened, was let out, after which the application was again made uſe of during the evacuated ſtate of the complaint; but it had not prevented the re-accumulation of the water.

It would certainly be a moſt deſirable plan, to get rid of the diſeaſe without any operation; but we know too well how confined our powers are in diſperſing collections of fluids within ſacculi mucoſi, and ſome kinds of encyſted tumors, whoſe integuments are comparatively thin, and therefore muſt conceive, that much greater power would be requiſite to act through the ſcrotum and thickened tunica vaginalis, ſo as to produce abſorption of the fluid and coheſion of the tunics.

Hydroceles have been accidentally diſperſed by various means, particularly by a blow, by a fever, and by ſickneſs at ſea. I do

not entertain the ſmalleſt doubt, that the above remedy, which has been propoſed by an ingenious and able practitioner, has produced the ſame effect; but I cannot help doubting its capability of frequently producing it, from theſe and many other inſtances I have been witneſs to, and have been informed of, in which it has been equally unſucceſsful.

The above gentleman, ſome time after, put himſelf under my care; I let out a moderate quantity of fluid, and threw in ſome injection. The inflammation which was produced in this caſe was ſo moderate that he would not ſubmit to be confined; but in two or three days after the operation, notwithſtanding the teſtis was evidently inflamed and larger than natural, went out and took his uſual exerciſe. This brought on ſo much ſwelling as made him content to ſtay at home a fortnight, during which time it increaſed

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in ſize, and gradually leſſened; but at no time was at all painful, unleſs it was handled. Though, from the little attention paid to it at firſt, the tumefaction in this caſe had been rather obſtinate, it was, in about three weeks, ſo nearly ſubſided, that he went out of town, with every appearance of the accompliſhment of a perfect cure. I have ſeen him many times ſince, and there is no appearance of his ever having had a Hydrocele.

Case X.

Mr. Pitts evacuated a large Hydrocele of a middle aged man; the teſticle was found larger and harder than uſual; he permitted me to throw in an injection, which, on account of the ſize and thickneſs of the parts, I had made rather ſtronger than uſual; there was not quite enough to fill it, but I preſſed it ſo as to make it find its way over the

the whole cavity, and ſuffered it to remain in ſix minutes. I did not ſee him again till the fifth day; the ſcrotum was conſiderably inflamed, and tender to the touch. I directed him to remain in bed, and to apply a poultice made with extr. ſaturn. the next day the inflammation was leſſened, and he was free from pain, and the tumor began to ſubſide. There is ſo great ſimilarity in the progreſs of theſe caſes, that I have only to ſay the inflammation continued gradually to leſſen, and in leſs than a month the teſtis was of its natural ſize, and the man was diſcharged. He has ſince been in the hoſpital for another complaint, and we have had opportunities of examining the part; the adheſion appears to have univerſally taken place, and conſequently there is not the leaſt veſtige of the Hydrocele.

Case XI.

'February 7, 1789, I emptied the Hydrocele of a young man, let out a moderate ſize tea-cup of fluid, threw in the ſame quantity of injection, and kept it in three minutes; the patient complained of ſome pain ſhooting toward his back: the 9th he had no pain; the inflammation very moderate: the 10th no great alteration; but I obſerved, what indeed I had often before remarked, that the ſcrotum appeared diſtended, as if again filling with water. The inflammation continued to proceed moderately, and gradually to ſubſide. The patient was ſo free from pain and every complaint, that he choſe to leave the houſe in leſs than three weeks; and, indeed, before the ſwelling was quite gone, to follow his occupation of a tide-waiter. I have ſince had many opportunities of ſeeing him and examining the part; the

adheſion

adhesion appears perfect, and the disease completely cured.

Case XII.

March 6th, 1789, I went with Mr. R. Croft to see a young man who had a Hydrocele on each side. Mr. Croft had once performed the palliative cure on the left, which was now filled again, and was much larger than the other. I let out a large quantity of fluid, and found the testis in a good state, though larger than natural. I introduced sufficient injection to distend the bag, and kept it in four minutes; the man complained of some pain when it was first thrown in, but was perfectly easy before the four minutes were expired. I then proceeded to evacuate the other; but, as the quantity of water was small, and I could not safely introduce the instrument which I generally use for the purpose of injecting, I contented myself

with emptying it by means of a ſmall trochar, and found the teſtis large in proportion to the ſize of the tumor; I withdrew the cannula, and left it to take the chance of what might follow from partaking of the neighbouring inflammation which I expected to take place. Mr. Croft ſaw him the next day, and gave me an account that he had riſen, and was walking about the room, and that the parts were beginning to ſwell. As this was greater liberty than I had yet given, I begged he might immediately go to bed, and have a poultice applied. I viſited him next day, and found more inflammation than I had ever ſeen after this operation; and, what appeared extraordinary and fortunate, the ſide which had not been injected was almoſt as much inflamed as the other; but he complained not of the ſmalleſt pain in either. The 14th, I ſaw him again; he continued free from pain, and the inflammation was

very much abated. The ſide which had not been injected appeared leſs likely to diminiſh than the other; and the apparent feel of fluid which I obſerved often follows, was more than uſually perceptible. On the 20th, a fortnight from the operation, the ſide on which the injection had been uſed was perfectly well; in the other the water was evidently collecting very faſt; which demonſtrates how little effect external inflammation can have when it is to act through the ſcrotum and tunica vaginalis, and points out the greater certainty which follows the application of the ſtimulus to the inſide of the cavity: in this caſe, notwithſtanding the water was evacuated, and a much more conſiderable inflammation was raiſed on the ſcrotum than could have been cauſed by almoſt any external application, no internal effect was produced. I took leave of him, recommending him to do nothing farther till

it was ſufficiently full to be treated in the ſame manner.

Case XIII.

Mr. Croft continued to ſee him from time to time, and gave me an account that the ſide which had been injected, remained perfectly well; but that the other was large, and he wiſhed me to perform the ſame operation on it. May the 2d, I examined it, and found the left ſide perfectly well, and free from water; the right diſtended, but not very large. I plainly diſcovered, through the water, that the teſtis was larger than it ought to be; and it was not without great care, that I was able to paſs in the trochar without injuring it. I let out about five ounces of fluid, filled it with injection, and treated it in every reſpect like the other. I ſaw him two days after; he ſaid he had paſſed a reſtleſs night, and the part was more inflamed

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and tumefied than uſual; on inquiry, I found he had eaten a dinner of roaſt beef and drank porter. After taking a little opening medicine, and uſing a lower regimen, in two days the tumor was leſs, and the inflammation more moderate. In about the uſual time he got well; and, I have been informed, he continues perfectly free from any complaint on either ſide.

Case XIV.

May 16, 1789, I let out about five ounces of a ſtraw-coloured fluid from the Hydrocele of a young man, and threw in an injection; he complained of pain during the firſt three minutes, when he grew eaſy: in five minutes the injection was diſcharged. This proceeded, in every reſpect, like thoſe I have related, with a very moderate inflammation, which decreaſed gradually.

He has ſince applied to me, with a vene-

real ſwelling in both his teſtes; which, by means of mercurial frictions in the internal parts of his thighs, are both decreaſing, but there is not the ſmalleſt ſign of his ever having had water in either.

Case XV.

In the autumn of the ſame year a gentleman came from Barbadoes on purpoſe to be cured of a large Hydrocele. With his conſent, I intended to uſe the method by injection; but, at the inſtant when I had paſſed in the trochar, with a violent involuntary motion of his body he forced it out with the cannula, by which accident a ſmall quantity of water only followed through the external orifice, but a conſiderable portion eſcaped from the tunica vaginalis, and inſinuated itſelf into the cellular membrane of the ſcrotum, making a large ſwelling, which put

a total

a total ſtop to the intended operation. As his time was limited, and he was anxious to return, he preſſed me to perform immediately the operation by inciſion, or by any other method; however, I perſuaded him to wait a fortnight, by which time the extravaſated fluid was nearly abſorbed: but, as the quantity which remained in the tunica vaginalis was ſmall, and conſequently the cavity was become leſs capacious; and as he was ſo particularly circumſtanced with regard to leaving this country, I did not chooſe to try the injection, but there being juſt ſufficient room for the inſtrument to paſs ſafely, I performed the operation by the ſeton.

This caſe terminated well, and the gentleman is returned perfectly cured; but it was attended in its progreſs with an abſceſs, the conſequence of a much greater degree of inflammation than I have ever experienced from the uſe of injection, and indeed abundantly

abundantly more than was neceſſary for the cure.

The accident by which the inſtrument was forced out may ſerve as a caution, and point out the propriety of placing the patient againſt a table, or upon a couch, or in any ſituation in which it will not be in his power to recede.

Case XVI.

About the ſame time I injected the Hydrocele of an Iriſh gentleman, aged 30. He felt little pain while the injection was in; the next day the inflammation was moderate, and proceeded in a gentle manner, with ſcarcely any variation from moſt of thoſe caſes in which I had uſed injection, and whoſe progreſs I have deſcribed; it is therefore unneceſſary to take up more of the reader's time in particularizing the ſymptoms.

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The foregoing caſes were publiſhed in my laſt treatiſe on this ſubject, but, for the reaſons before mentioned, I have been induced to reprint them, and add others which have ſince occurred.

Case XVII.

March 9, 1790, a gentleman from Nottinghamſhire applied to me with a Hydrocele on the left ſide; ſome few years before he had been troubled with the ſame complaint on the other, which had been cured by Mr. Pott by the ſeton, and continued perfectly well. I mentioned to him the method which I had adopted, and he agreed to give it a trial. Aſſiſted by Mr. Long, I emptied the bag, which was not large, and filled it with injection, which was retained about the uſual time;

time; he complained of little pain either during the operation or afterwards; the inflammation increaſed gradually, and ſo diminiſhed; in a week after the operation he was permitted to walk, and in three weeks he was well enough to return into the country. In December 1790, I received an account from himſelf aſſuring me of his perfect recovery. As he had undergone the two different methods of cure, he was a competent judge with regard to pain and inconvenience attending both, and I make no ſcruple in aſſerting that he warmly declared his preference to the injection.

Case XVIII.

The Rev. Mr. ——— ſhewed me a very large Hydrocele, which he deſired me to cure by injection. April 15, 1790, having drawn off a large quantity of water, I refilled it with injection

injection of moderate ſtrength, and retained it ſeven minutes, during which time he felt little pain; in the afternoon had a ſlight attack of pain; next day was perfectly eaſy, though there had ariſen a ſufficient inflammation, which increaſed gently, and gradually ſubſided, without pain or inconvenience. On the 4th of May he was well enough to go to his living in Huntingdonſhire.

In November the ſame year, he did me the favour to call in Hanover-ſquare, and permitted me to examine the part; it appeared ſo perfectly well, that, had it not been for a tuck in the ſkin where the water had formerly been let out by a lancet, and an adheſion had taken place between the ſcrotum and tunica vaginalis, it would have been difficult to have diſtinguiſhed the ſide where the diſeaſe had been from the other.

Case XIX.

I saw Captain —— with an uncommonly large and much diſtended Hydrocele, which, from having been continually preſſed on by a ſuſpenſory, and tight breeches, had a remarkably broad baſis, which reached from high up on one groin acroſs the ſcrotum to the other thigh; I obſerved a large ſcar or cicatrix almoſt the whole length of it: the account he gave me of it was, that about a year and a quarter before, the operation of inciſion had been performed on it in Ireland; that ſo ſoon as the wound was healed, the water began to collect again; that he had ſuffered ſo ſeverely by the operation, and by the ſubſequent treatment, that he was determined to aſk no further advice on it, till, having been ſo long accumulating, it was from its ſize become intolerable: it was indeed ſo large, and the tunic ſo much thickened, that I ob-

jected

jected to performing any but the palliative operation, and recommended him to put off the attempt to cure it radically till it ſhould fill again, and become of a more moderate ſize: however, as it would have been very inconvenient to him to come back again from Ireland, and as the injection could do no harm, if it did not ſucceed, I was induced to riſk the credit of it; accordingly I emptied the bag, and threw in a very large quantity of the injection. He complained of a good deal of pain during the greateſt part of the time it remained in, which was about ſeven minutes; conſiderable inflammation ſucceeded, and next day it appeared nearly as large as before it was let out, but he was quite free from pain: it continued inflamed and ſwelled for ſeveral days, when it gradually leſſened; at the end of a fortnight it was nearly ſubſided, and he was permitted to walk about the room: on the 6th of May

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he went to his friend's houſe at Hampſtead; the 7th I ſaw him; there appeared no more ſwelling than was cauſed by the ſtill prodigiouſly large and thickened tunica vaginalis which had contained ſo much fluid, but there was no ſign of any freſh accumulation: he had not the ſmalleſt pain, and took his exerciſe as uſual. I ſaw him ſome time after, and the whole tumor was conſiderably leſſened: he is ſince returned to Ireland; but, from his friends who reſide in London, I have continual opportunities of knowing that he remains perfectly free from any return of his complaint. This caſe is more in favour of injection than any I have ſeen, as, from the great diſtention and ſize of it, there was the greateſt improbability of the parts being brought ſufficiently into contact to bring about an univerſal coheſion.

Case XX.

May 4, 1790, I injected the Hydrocele of a patient of Mr. Pitts, which was large, but the ſac thin; he complained of ſome pain during the operation, which ceaſed before the injection was withdrawn: next day he was perfectly eaſy; a gentle inflammation took place, which proceeded in every reſpect as uſual. I have ſeen him ſince, and he continues perfectly well.

Case XXI.

The following caſe may prove an uſeful caution to future operators. A gentleman attempted to perform the operation of injecting a Hydrocele; but after he had paſſed the trochar and evacuated the water, before he had his apparatus and injection ready, by ſome accident the cannula

 ſlipped

ſlipped out of the ſac of the Hydrocele; when he attempted to throw in the wine it met with reſiſtance, notwithſtanding which he forced it in, till finding the whole ſcrotum on both ſides uniformly increaſed in bulk, he began to ſuſpect that he was not filling the cavity of the tunica vaginalis, on which he attempted to evacuate it, and get rid of what he had thrown in, but it was impoſſible. The injection having diffuſed itſelf among the cellular membrane under the ſcrotum, he was obliged to leave it there; in conſequence of which violent inflammation, and a mortification and ſlough of the ſcrotum, followed, and left the teſtes bare; the patient however recovered.

I have been informed of another caſe, in which ſome portion of the injection was ſuffered to be diffuſed in the cellular membrane under the ſkin, which formed ſome ſmall abſceſſes. If the operation be rightly performed

performed this can never happen; or if by chance the cannula ſhould ſlip out of the tunic, the completion of the operation pro hâc vice ſhould be ſuſpended.

Case XXII.

September 1790, a gentleman of the profeſſion from Barbadoes applied to me; he ſaid he had had a Hydrocele on the right ſide, which, after having tried to cure by the ſal ammon. both in the full and empty ſtate, in vain, had been cured by the ſeton, the marks of which were viſible by the tucking in of the ſkin where the ſeton had paſſed. It remained perfectly well; but he now laboured under the ſame complaint on the left. I let out the water, which was in ſmall quantity, as the teſtis itſelf was very large and occupied the greateſt part of the tumor, yet did not appear ſo hard or ſo diſeaſed as to forbid an

attempt to cure the Hydrocle. I filled the cavity with injection, which gave little pain; ſufficient inflammation ſucceeded, which gradually ſubſided: in leſs than a fortnight he was perfectly well, and went out about his buſineſs as uſual; he aſſured me he found the injection an incomparably eaſier mode than the ſeton.

Case XXIII.

October 1790, a gentleman ſhewed me a Hydrocele of moderate ſize, which he had been endeavouring to diſcuſs with the ſolution of ſal ammoniac, and had tried it to the full extent of its powers; but, though it had raiſed great inflammation on the ſcrotum, had produced no effect in leſſening the tumor. In the preſence of Dr. Hallifax and Mr. Serjeant Hawkins, I drew off its contents, which were not remarkable in quantity or quality.

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The patient appeared to be of a very irritable habit, complained of pain in his teſtis before the water was diſcharged, and his pain increaſed when the bag was empty; I threw in an injection of moderate ſtrength, from which he alſo expreſſed more than uſual pain while it was retained, and after it was diſcharged; this was much augmented by being obliged to go up ſtairs to his bed. Though the ſenſation which he expreſſed was very uncommon, it may ſerve as a caution againſt performing the operation out of the bed room; when in bed he continued to complain, yet not of the teſtis, but of an aching in his back and kidneys, to which, however, he ſaid he had been much ſubject: he took a gentle anodyne, and the pain ſubſided in about an hour and a half, after which he grew eaſy, and ſo continued all day. The next day there was ſome tenſion on the part, but the patient was perfectly eaſy; in the afternoon he got

up and lay on a couch, and two days after went into the next room. The inflammation and tenſion increaſed gradually, and ſeemed at the height about the ſeventh day, after which it leſſened; he was now only ſenſible of weight in the part. The tenth day he went down ſtairs, walked about, and ſat on his couch; indeed, being of a lively and active diſpoſition, he was not ſo attentive to keep in a quiet poſture as I could have wiſhed; however no accident to the part, nor impediment to its diminution, occurred; it gradually ſubſided, which, about the fourteenth, I haſtened by a more powerful antiphlogiſtic application; ſoon after which time he went out in his carriage. November 12, three weeks from the operation, I examined the part; there was no inflammation remaining; it was free from fluid, and no bigger than what was produced by the large and thickened tunic wrapping round the teſticle.

I have

I have repeatedly heard from this gentleman ſince, and he remains perfectly well.

On the ſame day, 5th of October, I performed the palliative cure on the Hydrocele of a young gentleman, and the only reaſon for my noticing it is, that on examining it the 14th, nine days from the operation, there was an evident fluctuation of re-accummulated fluid, which is a proof that it is not neceſſary to wait long before we may be convinced of the cure, or the return of the complaint, though the contrary doctrine has been advanced.

Case XXIV.

November 13, 1790, I aſſiſted Mr. Blicke, at St. Bartholomew's hoſpital, in letting out the water of a moderate ſized Hydrocele of a young man which had been once before ſimply evacuated; it was now filled with

injection, which was ſuffered to remain ſix minutes. The patient complained of ſome pain at firſt, but ſaid he was eaſy before the injection was let out; after which, he walked without any uneaſineſs, or difficulty, to his ward. The 15th I ſaw him again; he had felt ſome pain for about an hour in the afternoon after the operation, and had been perfectly eaſy ever ſince; the whole ſcrotum appeared ſwollen and inflamed, but not painful. On the 20th it was ſubſiding, and it continued gradually to diminiſh.

December 1ſt I examined it; the teſticle continued larger than the other, the coats probably not having had ſufficient time to become thin; but there was not the ſmalleſt return of water.

Case XXV.

February 1791, a gentleman from India conſulted me on account of a large Hydrocele which had been collecting more than three years, and for which he wiſhed to obtain a radical cure. As it was of conſiderable magnitude, and had never been emptied, I adviſed him to content himſelf, for the preſent, with the palliative cure; I let out about twenty ounces of ſtraw coloured water, and found the teſtis much enlarged and the tunics apparently much thickened; the water ſoon began again gradually to collect. I ſaw him now and then till May following, when it was full enough to be ſubmitted to the radical cure, and the mode by injection was determined on. After having paſſed in the trochar, while the fluid was running out, by ſome accident, the ſac contracted quicker than the ſcrotum, and let

let the cannula ſlip out. I was not able again to find the opening through which it had paſſed into the ſac, though it was ſufficiently open to permit part of the water to flow out of the ſac, and inſinuate itſelf into the cellular membrane of the ſcrotum; I therefore immediately deſiſted from the intention of completing the operation at that time. Though the quantity of extravaſated fluid was conſiderable, it was attended with little inconvenience, and was ſoon abſorbed: the Hydrocele filled again as uſual; and in June following, it not being then convenient to him to undergo a radical cure, I again let out about the ſame quantity as it firſt contained.

About the ſame time a gentleman called on me from Oxfordſhire, with a large ſwelling in the ſcrotum: the account which he gave me was, that the origin of it he could not account for, but that it had been gradu-

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ally increaſing for a great length of time, till about a twelvemonth preceding it was very large, and while it was in that ſtate he had the misfortune of a ſevere fall from his horſe; when he got home he perceived the whole ſcrotum enlarged, and the part where was the original ſwelling, ſmaller and ſofter; the ſkin was black from the bruiſe, but the whole of the ſwelling gradually went away, and he concluded he had got rid of his Hydrocele. However, he ſoon found that he was miſtaken, as it ſoon began to be again diſtended, and in ſix months was as large as before. Notwithſtanding the failure of ſucceſs from it being thus burſt, he was determined to try a ſimilar operation, and therefore imprudently ſtruck it with violence againſt a table; the ſame conſequences followed as were produced by the fall, the ſac was burſt, the fluid found its way into the cellular membrane, and was, as before, gradually re-abſorbed; and he again

found himſelf diſappointed of a cure, as the Hydrocele again began to collect, and in ſix months more was as large as ever. He did not chooſe to puſh his own experiments further, but came to London to conſult me, and wiſhed me to perform the radical cure. It now appeared large, and much diſtended; but, as it was impoſſible to ſay what miſchief had been done to the teſticle by the violence which had been offered to it, and conſequently I could not determine whether it was in a fit ſtate to bear the neceſſary inflammation, I recommended the ſimple puncture to be firſt tried. On paſſing the trochar I was not ſurpriſed to find the fluid very deeply tinged with blood; the teſtis however did not appear to be much injured, though larger than natural. When he left me it was his intention to return to town as ſoon as it ſhould again be filled.

I have mentioned theſe two inſtances in

confirmation of what I before advanced, that it is not neceſſary in theſe caſes of extravaſation to perform the inciſion, or any other operation, only to wait with patience, and Nature will do her own work of abſorption, which indeed may be promoted by the uſual diſcutient applications.

Case XXVI.

January 1791, Mr. —— ſhewed me a large tumor in the ſcrotum; he ſaid he had perceived a ſmall ſwelling in the part ſome years; that it had been long ſtationary as to ſize, and ſoft; and he always imagined it to be air. This was, probably, one of thoſe kinds of Hydrocele which do not increaſe without a freſh cauſe, of which I have ſeen ſome inſtances. He had lately been thrown from his horſe, and had bruiſed it greatly; when he was recovered from the external

bruiſes

bruiſes he found the ſcrotum much enlarged and diſtended. I repreſented to him that it was filled with fluid, that probably the teſtis had been bruiſed, and that what before had been a ſimple Hydrocele, was now increaſed by an addition of blood. He wiſhed the radical cure to be performed, but I recommended the ſimple puncture to be firſt tried, as it was not clear how far the teſticle was concerned in the ſwelling: this was performed with caution, and with the point of a lancet. As I expected, a fluid immediately ruſhed out, of which blood appeared to conſtitute much the major part. As the nature of the caſe was now clear, which was all the information we wanted, and as the fluid did not freely follow through the ſmall puncture, the orifice was cloſed and ſuffered to heal. March 6, 1791, it appeared again very full and turgid. As he now choſe to have the radical cure performed, I paſſed in a trochar,

and

and let out about three parts of a pint of pellucid ſtraw-coloured water. Here I muſt remark a fact which perhaps is difficult to be accounted for; the fluid which was left in the ſac in January, was evidently compoſed of blood and water; from that time it continued to fill again, and when it was now let out it was perfectly free from blood, ſo that the abſorbents, on the ſurface of the membranes, appeared, in this caſe, to have had the power of ſeparating the red globules from the aqueous particles, and abſorbing them; at the ſame time the water, ſo far from diminiſhing, was increaſed.

I threw in ſome injection, and he complained of little pain; he continued with ſcarcely any uneaſineſs all the day, but in the night was ſeized with a gouty cholic, to which he was much ſubject, and which he thought he had now brought on by abſtinence, which he had obſerved ſome days

previous

previous to the operation; this gave him a reſtleſs night, but he did not feel pain in the part. The next day he was well of this attack, and the part looked well, with rather more inflammation than uſual, probably owing to the reſtleſſneſs of the night, which made me keep him in bed longer than ordinary; however, the ſixth day from the operation both ſwelling and inflammation were gradually ſubſiding, and on the fourteenth all inflammation and tenderneſs were wholly diſſipated; the ſeventeenth he went out in a carriage, free from any pain or inconvenience; the complaint was completely got rid of, and he remains perfectly well.

Case XXVII.

April 26, 1791, I was deſired by Mr. Long to uſe the injection in a Hydrocele of a middle aged man; the perſon ſaid, ſeveral months

months before, he had overſtrained himſelf in mowing, and had felt a violent pain, which he deſcribed to have been in the ſpermatic chord, reaching up to the loins; that the chord ſwelled and inflamed, and afterwards, as that ſubſided, the Hydrocele began to collect below. I had ſeen the complaint in conſultation ſome months before, when, though it was diſtended uncommonly high into the ring, we had concluded it to be a Hydrocele, and Mr. Long let it out by a puncture. Immediately after the operation a violent and very unuſual pain, with ſubſequent inflammation, attacked the chord, which continued in a conſiderable degree, but did not, as was expected, produce a cure; the water again began to accumulate, and on that taking place the inflammatory ſymptoms ſeemed to ſubſide. Theſe unuſual complaints ſhewed ſomething peculiar in the caſe, or an uncommonly irritable habit; but as the Hydrocele was

again filled, I ſaw no objection to performing the operation for the radical cure. When I had punctured the bag, and was drawing off the water, in which there was nothing remarkable, he complained of great pain ſhooting up towards the kidneys on that ſide; on throwing in the injection he alſo complained more than common, but when the bag was completely filled, the pain ſubſided, and the injection was retained the uſual time. The next day the part was more tumefied, and the chord more affected than generally happens, his pulſe moderate, with no feveriſh ſymptoms; the following day he was ſomewhat better. The 3d of May, ſeven days from the operation, the tumor was much leſſened, he felt no pain, and the ſcrotum was beginning to corrugate. I ſaw him again on the 9th of May, when he was able to walk and take his uſual exerciſe. In about three weeks from the operation he was well, and

returned into the country perfectly cured of his Hydrocele.

It was my original intention to have confined my obſervations in this treatiſe to the Hydrocele of the tunica vaginalis teſtis, which moſt commonly requires our aſſiſtance, and on which alone I had tried the effect of injection; but a particular caſe having occurred ſince the preceding papers were written, and having been ſubmitted to this mode of cure, requires to be noticed; and as it materially differs from thoſe I have hitherto deſcribed, one ſpecies being a diſtention of a natural cavity, the other of a cavity produced by the diſeaſe, ſome previous account of it becomes neceſſary.

The Hydrocele of the Spermatic Chord has been divided into two kinds, one of which is an extravaſation of lymph, dif-

fuſed through the cellular ſubſtance of the ſpermatic veſſels, and is called the Hydrocele of the cells of the tunica communis.

When this diſeaſe is ſimple it is perfectly local, that is, it is confined entirely to the membrane forming the tunica communis, and does not at all affect either the dartos, the tunica vaginalis, or any other part: while it is ſmall it gives little trouble, and often paſſes for a varix of the ſpermatic chord; ſometimes it ariſes to ſo large a ſize, and gets into ſuch a ſtate as to become an object of ſurgery.

If the extravaſation be confined to what is called the ſpermatic proceſs, the opening in the tendon of the abdominal muſcle is not at all dilated, and the proceſs paſſing through it may be diſtinctly felt; but if the cellular membrane which inveſts the ſpermatic veſſels within the abdomen be affected, the tendinous aperture is enlarged, and the increaſed ſize of the diſtended membrane paſſing through it,

produces

produces to the touch a ſenſation not very unlike an omental rupture.

As it is not probable that this complaint can be cured by the ordinary methods of treating the common Hydrocele, it is not properly the ſubject of our preſent enquiry. Mr. Pott has mentioned the inciſion as the only method of cure which it admits, and which, he obſerves, is far from being void of hazard.

The other ſpecies of the diſeaſe has been called the ENCYSTED HYDROCELE of the TUNICA COMMUNIS.

This, like the preceding complaint, has its ſeat in the tunica communis, or cellular membrane which inveſts the ſpermatic chord, with this difference, that in the former the fluid is diffuſed through the cells of the membrane; in this it is collected in one cavity or bag, which is formed, as the coats of encyſted tumors uſually are, by preſſure and

 condenſation

condenſation of the common membrane. It moſt frequently poſſeſſes the middle of the ſpermatic proceſs between the teſticle and groin. Like the common Hydrocele, its growth is gradual, and when of the ſize of the teſticle, forms with it the outline of the figure of 8, beyond which period it varies in ſize and form, being ſometimes oblong, though commonly continuing globular; whether it be large or ſmall it is generally pretty tenſe, and the fluctuation of the water not eaſily perceptible. When lightly ſtruck on with the finger it gives the ſenſation of a bladder diſtended with air, and has been miſtaken for a ſpecies of pneumatocele, or wind rupture, a diſeaſe which does not exiſt; it gives no pain, nor unleſs it be very large, does it hinder any neceſſary action. It is perfectly circumſcribed, and has no connection with the cavity of the tunica vaginalis below, or the abdomen above. The teſticle

with

with its epididymis may be distinctly felt below the tumor, and are absolutely independent of it; and the upper part of the spermatic chord may generally be distinguished above it: it undergoes no alteration from change of the patient's posture, and is not affected by the action of the abdominal muscles in coughing, sneezing, &c.

These marks sufficiently describe the complaint, while it is simple and uncombined with any other; but when it is accompanied with a hernia, or a Hydrocele of the tunica vaginalis, it becomes more complex, and when the pressure from above or below is considerable, the nature of it sometimes cannot be precisely determined till the other complaints are removed; that is, till the contents of the abdomen are returned into their proper cavity, or the tunica vaginalis is emptied.

These are the diseases for which it is

moſt liable to be miſtaken; but, as was obſerved, it is eaſy to be diſtinguiſhed from the Hydrocele of the tunica vaginalis by the teſticle being perceptible in its natural ſtate below it; it ſometimes indeed preſſes ſo high upward as to make it impoſſible to feel the ſpermatic chord above it, which gives the appearance of a deſcent from the abdomen: however, abſence from every ſymptom of confinement of the inteſtinal canal, and the diſtinguiſhing ſymptoms and marks which were noticed when we were conſidering the Hydrocele of the tunica vaginalis, in the ſame ſituation, will be ſufficient to point out the true nature of this diſeaſe. Some have propoſed to cure this complaint by the application of a cauſtic, but I ſhould conceive there would be great danger of its penetrating too deep, and injuring the ſpermatic veſſels. A diviſion through its whole length is the only method which Mr. Pott has propoſed: but

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he obſerves, that though the operation may in general be performed with great eaſe and perfect ſafety, he has ſeen it prove troubleſome, hazardous, and fatal. Of ſuch conſequence are wounds in membranous parts in ſome particular habits. Mr. Pott, with his uſual candour, has related two caſes of the encyſted Hydrocele of the chord on which he performed the operation of inciſion; the firſt was laid open through its whole length, and a perfect cure was obtained: the other was in the ſame manner divided, but did not end ſo fortunately; the patient, though at the time of the operation apparently healthy, proved of an ill conditioned habit of body; the wound neither became tumid nor inflamed, his pulſe hard and frequent, accompanied with thirſt, reſtleſſneſs, and a languor in his countenance. On the fourth day the inciſion ſtill remained cold, lax, and flabby; and was ſo far from ſhewing any tendency to

ſuppurate,

ſuppurate, that, on the contrary, the edges began to look livid, and, notwithſtanding every medical aſſiſtance, he died on the ſeventh day.

Case XXVIII.

The caſe which I am to relate was of a perſon from Feverſham, about fifty-four years of age. On examination there appeared a tumor in the ſpermatic chord, about the ſize of a moderate orange, hard and incompreſſible; he imagined it proceeded from a blow, and had perceived it a conſiderable time growing larger, without cauſing much pain; but it was now becoming more and more uneaſy, from the diſtention of the increaſing fluid.

Below this fulneſs the teſtis with its epididymis was perfectly diſtinct, neither enlarged, nor in any manner altered, and the termination

tion of the tumor above was perfectly free from any connection with the contents of the abdomen; the chord between it and the ring being to be felt in its natural ſtate, though ſomewhat larger than uſual. I made no doubt of the diſeaſe being an encyſted Hydrocele of the ſpermatic chord.

The patient preſſed me to make a permanent cure of his complaint, as he ſaid his buſineſs was on board a ſhip, and the ſwelling was a great inconvenience to him.

Though I conceived the operation of inciſion might be performed in this caſe with leſs riſk of violent ſymptoms than when the tunica albuginea is uncovered, as in the common Hydrocele, ſtill I felt a repugnance to laying it open by a diviſion of ſuch membranous parts, and was inclined to try the effect of injection.

As the extreme ſenſibility of the tunics of the teſticle had always appeared to me the cauſe

cauſe why ſo mild an injection as I uſually employ in the common Hydrocele, is found to be ſufficiently ſtimulating to produce the proper effect, I had much doubt whether in this caſe, in which it would not meet with ſuch irritable ſurfaces, it would be powerful enough to raiſe the neceſſary inflammation: however, as the worſt that could have happened would have been diſappointment, I determined to try it of the uſual ſtrength. March 22, 1791, the trochar was paſſed through a very thick cyſt, and let out a quantity of ſtraw-coloured fluid, ſimilar to what is uſually found in the common Hydrocele; on the cavity being filled with injection no pain nor ſenſation was excited, on which account it was ſuffered to remain in near half an hour, and was then diſcharged. The injection having been ſo perfectly innocent, I expected the effect from it to be proportionally ſmall; but was pleaſed to find, next day,

ſome

ſome inflammation on the part, and the patient ſaid he had felt ſome pain. From that time it proceeded in every reſpect like a Hydrocele of the tunica vaginalis, it gently ſwelled, and had the appearance of a freſh collection of fluid; in about a week it began to ſubſide, and gradually decreaſed, till, in leſs than three weeks, it came to the ſize of a ſmall walnut, and felt to be only the remaining ſolid thickneſs of the cyſt; after which it ſeemed ſtationary, and no alteration appearing likely to take place, about the end of the month from the operation he went into the country.

I had an opportunity of ſeeing him the 10th of May following, and the part which had been the ſeat of the diſeaſe was become ſo nearly of the ſize of the reſt of the chord, that the difference was ſcarcely perceptible. This is an additional inſtance of membranous parts growing thick from preſſure, and again becoming

becoming thin, and of their natural texture, from the abſence of it.

The ſucceſs of the vinous injection, in this and other caſes where I have tried it, particularly in a large ganglion, and a collection of glair on the patella, makes it probable that it will be found extenſively uſeful in all cavities where we wiſh to procure an adheſion without deſtruction of parts.

We have now conſidered all the methods which have been uſually employed for the cure of this complaint, and I have endeavoured, with fairneſs and impartiality, to ſtate the reſpective advantages and inconveniences attending them. The proportional merit however of different remedies can never be exactly determined; few men have opportunities of ſeeing a variety of remedies repeatedly tried, and perhaps ſtill fewer poſſeſs a ſufficient

cient ſhare of candour to weigh the merits and defects of each in an equal balance; conſequently medical practice is never ſettled in any caſe till it be nearly perfect, or, at leaſt, till ſome one propoſed remedy bears no compariſon in point of excellence with the reſt.

Thus far however I think we may fairly gather from what has been related, that there are ſome ſo painful in the execution, and dangerous in their conſequences, that they ought to be laid aſide. Such appears to me the opening the ſac of the Hydrocele, and laying bare the teſticle, whether it be done with the knife or cauſtic; for although the operation of INCISION may have been improved by the ingenuity of ſome among the moderns, and the whole of the ſubſequent treatment rendered leſs violent than former methods, yet, as far as my opinion goes, the practice is ſtill ſevere, unneceſſary, and therefore wrong.

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The TENT, after having been practiſed for two hundred years, has been ſo little uſed of late that we have ſcarcely ſufficient data to judge of its effects and conſequences; the inſtances which I have quoted are certainly not in its favour. On the whole, I ſhould conceive it would have the principal inconvenience of the ſeton, that of being a ſolid body, without an equal extent of ſervice. As the operation of it muſt neceſſarily be more confined, and touch a ſmaller ſurface, the inflammation which ſhould follow would be leſs likely to be ſpread over the whole cavity of the tunica vaginalis than that induced by the ſeton, which paſſes through the whole of it; and when the Tent is introduced from an opening in the upper part it muſt be highly dangerous.

There remain the exciſion, the application of the ſmall cauſtic, the ſeton, and injections.

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The EXCISION may poſſibly be neceſſary in ſome old caſes, where the coats, from long and repeated diſtention, are become thick and rigid: ſuch, however, very rarely happen; nor can it be neceſſary in theſe until the milder methods have been tried and have failed.

With regard to the SMALL CAUSTIC and SETON, they have each ſo many advocates, that I am far from determining which deſerves the preference: but for the reaſons given, and which I repeat, the cauſtic being deſigned to deſtroy, and cauſe to ſlough away a portion of the ſcrotum, and the whole of the tunica vaginalis, which produces a painful and offenſive ulcer; on the contrary, the object of the ſeton being to preſerve, as much as poſſible, the natural and perfect ſtate of all the parts, I am inclined to give my vote in favour of the latter.

They are both certainly great improve-

ments, in compariſon of all the preceding operations; yet, as there are objections to be made to both, I ſhall eſteem myſelf fortunate, if I am the means of introducing into this country a method, which is not liable to the inconveniences attending either of them; and I flatter myſelf I have related ſufficient inſtances to prove that the cure by INJECTION really deſerves a preference.

There is one merit which I am confident the injection poſſeſſes in a very ſuperior degree, that the inflammation which is excited by it is ſo gentle, that it may be ſafely uſed almoſt under any circumſtances, and at any period of life; and if it ſhould not ſucceed, that is, if the inflammation ſhould not be raiſed to a ſufficient degree to effect the purpoſe of coheſion, it can do no harm, nor produce the ſmalleſt ill effect or inconvenience, provided it is properly performed. The ſame conſequences alone would take place as uſu-

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ally follow the mere letting it out by puncture. There would be a freſh accumulation of water, and we ſhould not be prevented from another trial to cure it, by injection, by the ſeton, by cauſtic, or any other method, juſt as if no previous operation had been attempted.

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